Teacher professional learning in senior secondary vocational education

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Teacher Professional Learning in Senior Secondary Vocational Education

The role of goal orientation, managerial coaching behavior, and team learning

Teacher Professional Learning in Senior Secondary Vocational Education:

The role of goal orientation, managerial coaching behavior, and team learning

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CHAPTER 1

General Introduction

"When we talk about learning in the workplace we should not […] make the mistake of assuming that the workplace is a unified environment for all learners. Instead, we should recognize that people's situations and organisational positions with respect to working and learning in the workplace differ." (Tynjälä, 2008; p. 132)

This dissertation examines teacher professional development in senior secondary vocational education and training (SSVET). In the last decade, SSVET in the Netherland was confronted with the implementation of competence-based education (CBE) as part of a major educational reform (De Bruijn, Billet, & Onstenk, 2017). The aim of CBE is to develop an authentic learning environment, with a strong link to the future occupation of students (Biemans, Nieuwenhuis, Poell, Mulder, & Wesselink, 2004). Thus, teachers from multiple disciplines must work together to attain an integrated educational program (Truijen, Sleegers, Meelissen, & Nieuwenhuis, 2013). To support the implementation of CBE, the Dutch government and labor organizations for SSVET in the Netherlands emphasized the need for teacher professional development by signing a collective agreement. This agreement states that teachers are responsible for their own professional development, individually and as part of teacher teams (MBO-Raad, 2009). Teacher professional development is an ongoing and reciprocal process in which external sources of information, such as feedback or acquisition of new information through workshops contribute to the enhancement of teachers' knowledge, skills, and abilities, resulting in a change in teacher behaviors (Clarke & Hollingsworth, 2002). While teacher development can take place in formal types of education (e.g., obtaining a master's degree or certificate), informal on-the-job learning is a promising method for teachers' professional learning because learning is embedded in everyday practice and does not follow a standard curriculum (Tynjälä, 2008).

In the Netherlands, teacher professional development primarily concerns individual professional development (reading books, asking for feedback, participating in workshops), and less time is spent on collaborative professional learning with and from colleagues (OECD, 2016). During the day, the teaching work is still strongly individual because teachers primarily teach students and have less and little time for interaction with other teachers. Moreover, in most situations in which time is spent with colleagues, the topics discussed are more practical (e.g., discussing schedules, upcoming events, et cetera) and are less often focused on reflection and learning (Vangrieken, Dochy, & Raes, 2016). To use these collaboration moments for teacher professional learning, team learning seems to be a promising approach. However, team learning is not automatically present in teacher teams because the main aim of teacher teams is to work together. Thus, team learning can be seen as a 'by-product' of teacher collaboration.

In this dissertation, the factors that contribute to individual professional learning and team learning of SSVET teachers are the central focus point. These two concepts are interlinked. On the one hand, individual learning contributes to team learning because teachers individually acquire information (i.e., from people external to the team, or by reading books or following workshops) and might share this information in their teams (Van Offenbeek, 2001). On the other hand, team learning contributes to individual learning because individuals may learn from the discussions of multiple perspectives and the co-construction of a shared understanding that takes place in teams (Decuyper, Dochy, & Van den Bossche, 2010).

This dissertation explores two aspects that contribute to individual learning by teachers. The extent to which teachers invest in individual professional learning activities partially depend on their motivation for learning. Participation in informal learning activities is expected to be enhanced when teachers approach tasks with a goal-oriented perspective that focuses on learning and improving performance (Janssen & Prins, 2007). Therefore, this dissertation explores the role of teachers' motivation for tasks at hand during their work. While previous research has taken into account the separate effects of learning goals and performance goals on professional learning activities, such as asking for feedback (Janssen & Prins, 2007; Runhaar, Sanders, & Yang, 2010), no studies have

considered combinations of individual goal orientations in relation to professional development. Hence, exploring the role of goal orientation profiles in teacher professional development is the first aim of this dissertation.

Second, while teachers' goal orientation is a personal characteristic of teachers that influences their professional learning, environmental factors such as the role of leadership and team characteristics also must be considered (Dragoni, 2005). Specifically, leadership behavior that strengthens teachers' goal orientations to participate in challenging tasks, to invest in continuous learning and to strive for high levels of performance is a relevant predictor to include. Managerial coaching behavior, as an individually oriented leadership style, is expected to be the most suitable to stimulate goal orientations of teachers because this leadership style emphasizes continuous development (Dragoni, 2005). Moreover, managerial coaching behavior encompasses one-on-one interaction between a teacher and a manager, during which the manager formulates expectations for future development and performance and supports the teacher during this process with hands-on support and guidance (Heslin, Vandewalle, & Latham, 2006)ÿ. Therefore, managerial coaching behavior can provide support for teachers transferring to a goal orientation profile that combines aiming for success and continuous learning.

In relation to team learning, this dissertation explores the team conditions necessary for successful team learning in teacher teams. In current research, studies of team learning have mainly focused on the predictors of team learning and have paid less attention to the impact of team learning on team performance (van Woerkom & Croon, 2009) or on the implementation of educational innovations (Runhaar, ten Brinke, Kuijpers, Wesselink & Mulder, 2014). One of the aims of team learning in SSVET is to improve the implementation of educational innovations, such as CBE. However, the role of the team environment as a prerequisite for team learning and successful implementation of CBE in SSVET is not yet fully understood. Therefore, studies that focus on the link between team environment and implementation of educational innovations through team learning enhance our understanding of professional development for educational innovations.

In sum, this dissertation is the sum of two perspectives on teacher professional development: individual teacher learning and team learning in teacher teams.

The first part of this dissertation focuses on the relationship between teachers' goal orientations and individual professional learning (chapters 2, 3 and 4). In the second part of this dissertation, there is a shift from individual learning to team learning. This second part focuses on teacher team learning and the impact of teacher team learning on the implementation of competence-based education (chapters 5 and 6).

This introductory chapter will proceed with a background on the key concepts of this dissertation (section 1.1). Thereafter, SSVET, as the context of this dissertation, will be discussed, and the role of teacher teams in SSVET will be described more in-depth (section 1.2.). Furthermore, in section 1.3., the research questions of this dissertation will be addressed. In the last section of this dissertation (section 1.4.) the outline of this dissertation will be presented.

1.1. Defining the key concept of this dissertation

1.1.1. Professional development of teachers

Teacher professional development can be defined as the continuous uptake of activities that contribute to improvement of the professional knowledge, skills and competences of teachers. Teacher learning at work can occur informally through daily work, interaction with colleagues, parents or students or more formally by participating in workshops or longer educational programs (Richter, Kunter, Klusmann, Lüdtke, & Baumert, 2011; Tynjälä, 2008). While formal learning often is driven by the individual interests and motivations of teachers and follows a prescribed curriculum, informal learning is often not preorganized and includes activities performed by the individual (i.e., reading books, searching the internet, asking for feedback) or learning activities performed in collaboration with others (i.e., interaction with colleagues, collective preparation of lessons) (Kwakman, 2003).

In this dissertation, I will focus on two types of professional learning: individual learning and team learning in teacher teams. I define individual informal learning as information acquisition, using books, participation in workshops, reading course materials or asking for feedback from others (Van Offenbeek, 2001). Asking for feedback can take place inside the school context or by consulting experts outside the school using a teacher's network. Individual learning can facilitate team learning in teacher teams because the

acquired knowledge during individual learning activities can be shared among other teachers (Decuyper et al., 2010). Team learning refers to an iterative and continuous dialogue among teachers in a team resulting in renewed shared understanding or mental models (Decuyper et al., 2010; Edmondson, 1999; Gibson & Vermeulen, 2003). In this continuous dialogue, three processes are closely intertwined: knowledge sharing, constructive conflict and co-construction (Van den Bossche, Gijselaers, Segers, & Kirschner, 2006). By sharing knowledge, teachers provide their perspectives on a specific topic. When this perspective differs from the perspectives of other team members, and mutual understanding is absent, agreement on the interpretation and direction is necessary to continue the construction of new knowledge (Van den Bossche et al., 2006). Within-team communication regarding the disagreement within a team is referred to as constructive conflict. When teachers manage to converge the available perspectives into a new shared meaning, they co-construct new team knowledge (Van den Bossche et al., 2006; Van Offenbeek, 2001). A last step in the team learning process is to embed the newly obtained knowledge in the team memory using storage and retrieval processes. Therefore, the decisions made during the information processing phase are stored in agreements, minutes and shared mental models (Van Offenbeek, 2001).

1.1.2. Goal orientation

Goal orientations explain the differences in individual behavior in achievement settings, such as work, education, or sports (DeShon & Gillespie, 2005). The concept of goal orientations was introduced in the early 1990s by researchers who aimed to uncover how achievement motivation is related to the development and demonstration of ability (Ames, 1992; Dweck, 1986; Dweck, 1991; Nicholls, 1984). For this purpose, Dweck (1991) distinguished between two types of goals: mastery and performance goals. Mastery goals refer to the individual's intention to develop competences, knowledge or skills. Individuals with a mastery orientation perceive challenging tasks as an opportunity for learning, and they interpret failures as a starting point for learning. People with performance goals are concerned with positive confirmation of demonstrated behavior. Accordingly, in a low-performance situation, performance goals bring about negative feelings or helpless behavior because individuals interpret failure as a lack of ability (Dweck, 1991).

After Dweck introduced the mastery and performance goal orientation, scholars continued working on conceptual, empirical and methodological advancement of the goal orientation theory and worked towards a 2 x 2 framework for goal orientation adding the dimension of valence (Elliot & McGregor, 2001). In this framework, performance approach goals are associated with demonstrating high performance to others, whereas performance avoidance goals are characterized by avoiding the demonstration of incompetence. The relative standard that performance oriented individuals are comparing themselves with can include both external factors (such as colleagues, performance norms) and internalized standards (e.g., individual expectations or previous performance levels) (Van Yperen & Orehek, 2013). Mastery-approach goal orientation refers to the continued willingness to learn and develop compared to past performance, while mastery-avoidance goals refer to keeping obtained knowledge and skills updated and preventing them from becoming outdated (Baranik, Stanley, Bynum, & Lance, 2010; Elliot & McGregor, 2001). Finally, in this 2 x 2 framework, the possibility that employees do not endorse goals at all is not considered. This process is referred to as work-avoidance goal orientation: the preference for tasks that require minimal effort (Elliot, 1999). Moreover, the 2 x 2 framework does not consider a teacher's motivation to participate in tasks that contribute to strengthened social relationships with students; this achievement motivation is defined as the relational goal orientation (Butler, 2012).

1.1.3. Managerial coaching behavior

Managerial coaching is generally defined as the one-on-one interaction between a manager and an employee, with the intent to stimulate employees to improve their work performance (Heslin et al., 2006)′. Thus, managers can provide feedback, guidance and suggestions for improvement and support the development of their employees (Batson & Yoder, 2012; Ellinger, Hamlin, & Beattie, 2008; Hagen, 2012; Heslin et al., 2006). Managerial coaching differs from, for example, transformational and transactional leadership because it has a specific focus on empowerment in one-on-one interactions, while transformational leadership aims for collective empowerment (Anderson, 2013). Managerial coaching behavior includes communication regarding clear performance expectations and goal setting, providing constructive feedback on behavior, facilitating employees to try new alternatives and inspiring employees to fulfill their full potential (Heslin et al., 2006).

1.2. The context of this dissertation

The data for this dissertation were collected from teachers at SSVET schools in the Netherlands. After the completion of primary education (8 years), an early selection system is used to select students for secondary education. On average 50% of the students start with preparatory secondary vocational education (VMBO, four years), and 44% of the students start with either senior general secondary education (HAVO, five years) or preuniversity education (VWO, six years), and the remaining 6% continue with special education or practical training (Onderwijs in Cijfers, 2017). When graduating from secondary education, students can either switch to a higher level of secondary education (from VMBO to HAVO or from HAVO to VWO), continue with higher education (universities of applied sciences or universities) or continue with senior secondary education (SSVET). Approximately 47% of the students who complete secondary education continue education at SSVET colleges (Onderwijs in Cijfers, 2017).

In SSVET, four levels and two tracks exist within five sectors (economics & business, healthcare, engineering, agriculture & interdisciplinary). The four levels are training to assistant (level 1), basic training (level 2), professional training (level 3), and middle management and specialist training (level 4) (OECD, 2016). The two tracks are school-based training (BOL) and apprenticeship training (BBL), which differ in terms of the design of the program. BOL students (79% of the students; SSB, 2017) primarily receive their vocational training at school, while BBL students (21% of the students; SSB, 2017) receive most of their vocational education at the workplace and are at school generally one day a week. After completing SSVET, students can enter the labor market or continue with higher education by obtaining a bachelor's degree at a university of applied sciences (4 years) or a shorter (2 years) associate degree.

SSVET in the Netherlands is organized locally, in cooperation with businesses to provide an educational program that prepares students with the right set of competences for a vocational career at the labor market (De Bruijn et al., 2017). In the past decade, educational programs for SSVET in the Netherlands were

intensely modified to implement competence-based education (CBE). The aim of CBE is to develop meaningful educational programs, using the actual professional practice of workers as a starting point for the development of educational programs, instead of general subjects such as languages or mathematics (Biemans et al., 2004). This process results in an integrated and authentic learning environment for students. In SSVET programs, students are prepared for a vocational career, and the programs also have an additional focus on students' social participation, good citizenship and life-long learning (De Bruijn et al., 2017). In 2012, all SSVET colleges were required by the Dutch government to implement the CBE approach. Currently, SSVET colleges work with CBE in their programs and continuously work on innovating CBE.

To effectively organize and develop CBE, teachers from multiple disciplines must work together and share their knowledge, educational practices and ideas. Thus, SSVET schools use a team-based organizational structure around the specific educational programs. In these teacher teams, teachers from various backgrounds and expertise are united. On the one hand, teachers who specialize in general subjects, such as languages and mathematics, are part of the team. On the other hand, teachers with profession-specific knowledge, such as hairdressing instructors, animal care instructors, or graphic design instructors, are part of teacher teams. The collaboration between teachers from various relevant subjects was expected to contribute to the effective implementation of CBE (Truijen et al., 2013). The position of teacher teams in SSVET colleges is firmly embedded in agreements between the Dutch Ministry of Education, the teacher labor unions and the branch organizations for vocational education (MBO-Raad, 2009). Working in teacher teams is supposed to be effective for the implementation of CBE, and it is also advocated by the OECD (2016) as a means to improve teacher professional development.

1.3. Research questions of this dissertation

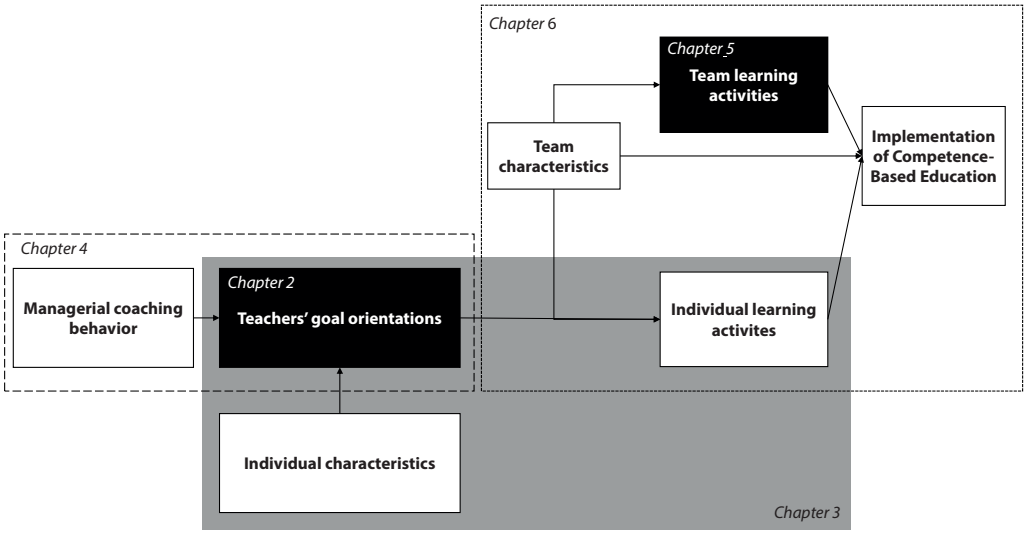
In this dissertation, the following six research questions, which are elaborated upon below, will be discussed.

1. What are teachers' goal orientations, how are teachers' goal orientations measured and how are teachers' goal orientations related to predictors and outcomes? (Chapter 2)

2. To what extent do teachers' goal orientation profiles exist, and how do teachers' goal orientation profiles change over time? (Chapters 3 and Chapter 4)
3. Which of the teachers' goal orientation profiles is the most beneficial for teachers' informal professional learning? (Chapter 3)
4. How can managers influence teachers' goal orientation profiles? (Chapter 4)
5. What are the stimulating and hindering factors for team learning in teacher teams? (Chapter 5)
6. What is the impact of team learning in teacher teams on the implementation of competence-based education in SSVET? (Chapter 6)

Figure 1.1 presents an overview of this dissertation. Chapters 3, 4 and 6 have been published as journal articles, and chapters 2 and 5 are currently under review. Some overlap among the chapters can be identified in the three chapters that discuss teachers' goal orientations (chapters 2, 3, and 4) and in the two chapters that explore the topic of team learning in teacher teams (chapters 5 and 6).

Figure 1.1 - A conceptual overview of this dissertation



CHAPTER 1

Research question 1: What are teachers' goal orientations, how are teachers' goal orientations measured and how are teachers' goal orientations related to predictors and outcomes?

Goal orientations are a widely researched topic in the context of students (Huang, 2012; Linnenbrink-Garcia, Tyson, & Patall, 2008) and in the work domain (Button, Mathieu, & Zajac, 1996; Payne, Youngcourt, & Beaubien, 2007). Although these studies provide a valuable ground for research on teachers' goal orientations, the generalizability of the results requires specific attention for two reasons. First, it is difficult to compare goal orientation research using student samples with research using teachers' samples. Although teachers work within schools, their primary concern at work is performance and not learning, while for students, learning and continuous development is the primary concern, and performance is a consequence of learning. Therefore, the pursuit of goal orientations is expected to differ between students and teachers. For this reason, the results from previous studies using student samples must be replicated using samples of teachers. Second, teachers differ from the general work context because the aim of their work is to increase student learning. Although this goal can be perceived as a performance outcome, investing in the development and learning of students requires a learning-oriented mindset of teachers. Therefore, teachers are expected to report different goal orientation scores compared to the work population at large. Moreover, the correlates for achievement goals for studies using teacher samples can be more contextualized compared to those for the general workforce. For example, when studies examine the relationship between goal orientations and instructional practices, the consequences for educational outcomes are explored (Retelsdorf, 2010; Schiefele, 2015). This consequence is unique to the teaching context, and a literature study that specifically focuses on teachers' goal orientations can reveal these relationships.

Although the focus of scholars on teachers' goal orientations is on the rise (Butler, 2007; Retelsdorf, Butler, Streblow, & Schiefele, 2010; Runhaar et al., 2010), there is no clear overview of the concepts, measures and associations with predictors and outcomes, which limits scholars in the field of teachers' goal orientations because it is unclear what areas need future exploration and in

what areas conclusions can be drawn regarding the directions of associations.

To answer this research question I conducted a systematic review (Chapter 2) by synthesizing the literature on teachers' goal orientations and by evaluating the type of measures and research approaches that were used.

Research question 2: To what extent do teachers' goal orientation profiles exist, and how do teachers' goal orientation profiles change over time?

Goal orientation profiles are clusters of multiple goal orientations that divide a sample into distinct groups. Goal orientation profiles build on the multiple goal perspective of Barron and Harackiewicz (2001), who posit that endorsing multiple goal orientations at the same time must be considered. Consequently, instead of directing attention towards the impact of individual goal orientations, the focus shifts to the impact of combinations of goal orientations. When studying configurations of goal orientations, more knowledge is obtained concerning the buffering or boosting function of individual goal orientations. On the one hand, a learning goal orientation can function as a buffer when teachers have a strong learning goal orientation instead of rather strong performance-avoidance goal orientation. Consequently, these teachers are concerned with skill improvement and challenge themselves to try out new tasks, while being sensitive to the judgment of others. On the other hand, a performance-approach goal orientation can function as a booster when a teacher endorses both learning and performance-approach goal orientations. While the theory of Barron and Harackiewicz (2001) provides justification for the existence of goal orientation profiles, the methodological approach that is often related to this theory restricts the estimation of goal orientation profiles. The drawback of the regular approach to estimate boosting and buffering effects (e.g., regression or ANOVA) is that the configuration of variables within a context is evaluated instead of the within-person combination of different levels of goal orientations. An approach that uses a person-centered approach is latent profile analysis (Pastor, Barron, Miller, & Davis, 2007). In this dissertation, I will use latent profile analysis to define teachers' goal orientation profiles.

Scholars who estimated goal orientation profiles have primarily used exclusively student samples (Jansen in de Wal, Hornstra, Prins, Peetsma, & van der

Veen, 2015; Kolić-Vehovec, Rončević, & Bajšanski, 2008; Luo, Paris, Hogan, & Luo, 2011; Pastor et al., 2007; Pulkka & Niemivirta, 2013; Schwinger, Steinmayr, & Spinath, 2012; Schwinger & Wild, 2012; Shim & Finch, 2014; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008, 2011, 2012). These studies generally identify between three and six goal orientation profiles as student samples. Although these studies provide a reasonable ground for the existence of goal orientation profiles, the results have not been replicated in the work context so far. One study has investigated goal orientation profiles in a sample of employees (Van Yperen & Orehek, 2013), but this study was not in the educational context and used a clustering method that is difficult to replicate due to the absence of clear fit indices (Nylund, Asparouhov, & Muthén, 2007; Pastor et al., 2007).

Moreover, in current studies on goal orientations, only a few have paid attention to changes in goal orientations over time (Kooij & Zacher, 2016; Parker, Martin, Colmar, & Liem, 2012; Potosky, 2010; Praetorius et al., 2014; Tonjes & Dickhauser, 2009). There are conflicting ideas regarding changes in goal orientations. One the one hand, the literature describes operationalized goal orientations as relatively stable traits that, compared to the Big Five personality traits, are difficult to change over time (DeShon & Gillespie, 2005; Payne et al., 2007). On the other hand, evidence exists that goal orientations can change over time because of a stable and variable component (Praetorius et al., 2014). Moreover, the research on the change in goal orientations over time tends to focus only on the change in single goal orientations rather than the change in configurations of goal orientations, which neglects the fact that change in single goal orientations over time may result in a change in goal orientation profile membership.

Therefore, this dissertation contributes to these knowledge gaps by using latent profile analysis as a means to identify goal orientation profiles and by verifying goal orientation profiles among teachers. With this aim in mind, an empirical study that evaluates goal orientation profiles of teachers and the changes in these profiles over time was conducted (Chapter 4).

Research question 3: Which of the teachers' goal orientation profiles is the most beneficial for teachers' informal professional learning?

Goal orientations are known to be related to teachers' professional learning (Chughtai & Buckley, 2010; Nitsche, Dickhäuser, Fasching, & Dresel, 2011, 2013;

Runhaar et al., 2010; van Daal, Donche, & De Maeyer, 2014). Teachers' professional learning can be operationalized as learning in a formal context, such as training, or initiated by teachers in an informal setting (Richter et al., 2011; Tynjälä, 2008). Informal learning is normally integrated into the school environment, and the focus of this dissertation is on two specific informal learning activities: asking for feedback and information acquisition. Information acquisition concerns all activities that a teacher can perform to obtain new information, such as reading books or searching the internet, reading course manuals or participating in internal school meetings or external workshops (Kwakman, 2003; Van Offenbeek, 2001). Asking for feedback refers to the information, advice or feedback obtained from individuals internal and external to a teacher's work environment (Janssen & Prins, 2007; Wong, 2004).

The individual task motivation of teachers is expected to influence both types of informal learning activities. Current studies that have focused on goal orientation and professional development provide valuable insights, such as a positive association between learning goal orientation and both acquisition of information (Janssen & Prins, 2007; Tuckey, Brewer, & Williamson, 2002; Weiss, Lurie, & MacInnis, 2008) and asking for feedback (Janssen & Prins, 2007; Morrison & Bies, 1991; VandeWalle, 2004). However, employees with a performance-approach goal orientation use the opportunity to ask for feedback as an opportunity to receive confirmation on their level of competence (Tuckey et al., 2002), while negative feedback is avoided to protect themselves from a loss of image (Kluger & Nir, 2010; Morrison & Bies, 1991). A limitation of the existing studies is the lack of focus on the impact of combinations of goal orientations (or profiles) on participation in teachers' professional learning activities. Moreover, most research on goal orientation profiles has investigated student learning. The context of student learning is different from the learning context of teachers because learning by students within schools has a dominant focus on structured learning while learning by teachers is mostly unstructured and informal (Tynjälä, 2008). Therefore, a new line of research that combines teachers' goal orientation profiles and teacher learning is needed.

To answer this research question, I addressed the differences in the frequency of participation in informal learning activities, depending on the assignment to different goal orientation profiles in Chapter 3 of my dissertation. Based on a

cross-sectional quantitative study, teachers' goal orientation profiles were identified, and differences in participation in professional development activities for each goal orientation profile were assessed.

Research question 4: How can managers influence teachers' goal orientation profiles?

Reflecting on the advantages and disadvantages of the goal orientations, one can conclude that not all goal orientation combinations are beneficial. The success-oriented goal orientation profile (combining high levels of learning and performance-approach, low levels of performance-avoidance goal orientations) may provide the best results for learning and individual performance of employees (Elliot & Church, 1997; Pintrich, 2000). Goal orientation profiles with low levels of learning and high levels of performance-avoidance goal orientations are hypothesized to be detrimental to learning and performance (Payne et al., 2007) . Based on previous longitudinal research, we know that teachers' goal orientations are partly stable and partly dynamic (Praetorius et al., 2014); however, the primary focus of the existing studies is on change in goal orientation variables separately (Kooij & Zacher, 2016) and not on change in configurations of goal orientations. Contextual factors, such as leadership, might influence the variable part of teachers' goal orientations because, during conversations with teachers, leaders can emphasize learning opportunities or guide teachers in setting goals (Praetorius et al., 2014). Current research on the leadership and individual goal orientations of teachers provides evidence for positive relationships between transformational leadership and followers' learning goal orientations (Hamstra, Van Yperen, Wisse, & Sassenberg, 2014; Runhaar et al., 2010; Sosik, Godshalk, & Yammarino, 2004) and between transactional leadership and followers' performance goal orientations (Hamstra et al., 2014; Yee, Lee, Yeung, & Cheng, 2013). Moreover, only the study by Runhaar et al. (2010) was performed in the context of education. Because goal orientations are individual characteristics, a managerial leadership style that focuses on stimulation of growth in individual employees is preferred over leadership styles that emphasize collectives of employees, such as transformational or transactional leadership. Therefore, managerial coaching behavior seems to be a promising leadership style to stimulate teachers to move towards the success-oriented profile.

A leader who demonstrates managerial coaching behavior provides feedback, inspires and supports employees in challenging tasks at work, stimulating levels of performance-approach and learning goal orientations and reducing the level of performance-avoidance goals (DeShon & Gillespie, 2005; Janssen & Prins, 2007; Tuckey et al., 2002). Other than the Runhaar et al. (2010) , no studies were conducted in the context of education that specifically reviewed the relationships between leadership and goal orientations. Moreover, to date, no studies have investigated the role of managerial coaching behavior relative to configurations of teachers' goal orientations. To evaluate how managerial coaching is related to teachers' goal orientation profiles, a longitudinal empirical study was conducted and will be presented in chapter 4 of this dissertation.

Research question 5: What is teachers' team learning, and what are the stimulating and hindering factors for team learning in teacher teams?

SSVET schools in the Netherlands tend to focus on teacher teams as a means for professional development because teams are seen as a promising tool to implement educational innovations (Somech & Drach-Zahavy, 2007). Team learning involves a continuous dialogue in which information and ideas are shared, conflicting perspectives are critically discussed and co-construction of knowledge results in a new shared understanding (Decuyper et al., 2010; Edmondson, 1999; Van den Bossche et al., 2006). Although reviews of team learning exist (Decuyper et al., 2010; Hannes, Raes, Vangenechten, Heyvaert, & Dochy, 2013; Timmermans, Van Linge, Van Petegem, Van Rompaey, & Denekens, 2012), the results of these reviews cannot be copied directly to the educational context because teacher teams are not easily comparable to other types of teams. During a day at work, teachers primarily perform their tasks independently, while teaching students; therefore, little time is left for dialogue with colleagues, which results in a lower level of task interdependence of teachers in comparison with other types of teams (e.g., nurses, IT teams) in which team members need one another to complete their daily tasks. Therefore, it is important to verify if results from general team learning research are generalizable to the educational context. Thus far, no structured overview of literature exists regarding team learning in teacher teams, which makes it difficult to specify the factors

that stimulate or hinder team learning in teacher teams. Therefore, a systematic literature study was conducted to evaluate studies on team learning in teacher teams and to synthesize results from qualitative, quantitative and mixed-method studies. The results from this study are presented in Chapter 5.

Research question 6: What is the impact of team learning in teacher teams on the implementation of competence-based education in SSVET?

Teacher teams play a pivotal role in the implementation of competence-based education (Truijen et al., 2013). According to the professional agreements between the national government and labor organizations (MBO-Raad, 2009), SSVET teacher teams in the Netherlands are responsible for both the organization and execution of vocational education and the quality of the educational programs delivered. Although investments in a team-based organizational structure within schools seem to be promising, implementing only a team-based structure might be insufficient for successful implementation of CBE. The extent to which teacher teams implement CBE is expected to depend on the amount of team learning obtained. Teachers need to share knowledge and discuss conflicting perspectives to obtain a shared understanding of the implementation of CBE. To obtain a shared understanding of competence-based education, teachers from multiple disciplines must listen to one another, discuss their opinions carefully and, consequently, act based on reasoning (Zoethout, Wesselink, Runhaar, & Mulder, 2017). However, assigning teachers to a teacher team might not be sufficient to stimulate team learning; team conditions, such as collective team identification, an appropriate team size and task interdependence, are also needed. Previous team learning research has demonstrated that teachers need to feel that they belong to a team and that teams need a certain level of task interdependence to achieve higher levels of team learning (Runhaar et al., 2014; Vangrieken et al., 2016). Larger quantitative studies exploring the link between team conditions for team learning and the impact on the implementation of CBE were not found. Therefore, this research question aimed to investigate the relationship between team learning and shared understanding of competence-based education. Thus, a quantitative empirical

study was conducted, the results of which are presented in chapter 6 of this dissertation.

1.4. Outline of this dissertation

The six research questions introduced above are related to the five chapters of this dissertation. The five chapters have been written in the form of a journal article. These articles can be read independently from one another; however, the consecutive chapters do build upon one another. Because the chapters are presented as journal articles, some repetition could not be avoided.

Chapter 2: Teachers' goal orientations: a systematic review of the literature

Chapter 2 presents a systematic literature review of quantitative studies on teachers' goal orientation. The systematic search resulted in 23 journal articles on teachers' goal orientations. This review summarizes existing research evaluating relationships of teachers' goal orientations with antecedents (i.e., self-efficacy or the school environment) and outcomes (i.e., instructional practices or participation in professional learning activities). Moreover, this systematic literature review addresses the methodological challenges of teachers' goal orientation research and evaluates the measures for teachers' goal orientation. This chapter addresses research question 1.

Chapter 3: Teachers' goal orientation profiles and participation in professional development activities

In Chapter 3, individual goal orientation profiles of teachers were estimated and related to two professional development activities of teachers: information acquisition and asking for feedback. This study used a cross-sectional research design and a sample of 984 teachers in senior secondary vocational education to estimate teachers' goal orientation profiles. As a result of the latent profile analysis, four different goal orientation profiles were found (research question 2). Moreover, depending on the type of goal orientation profiles the teachers belonged to, the differences in participation in two professional development activities (information acquisition and asking for feedback) were investigated (research question 3).

Chapter 4: Stability and change in teachers' goal orientation profiles over time; managerial coaching behavior as a predictor of profile change

Building on the teachers' goal orientation profiles that were introduced in chapter 3, in chapter 4, the change between goal orientation profiles over time was studied (research question 3). A sample of 521 senior secondary vocational education teachers was utilized to model the transitions between goal orientation profiles over two time points. Furthermore, this study focused on activation of goal orientation profiles through managerial coaching behavior. To this end, managerial coaching behavior was related as a predictor to time point 1, as well as related to change in goal orientation profiles over time (research question 4).

Chapter 5: Team learning in teacher teams: a systematic review of the literature

Until this point, the focus of the empirical studies was on the existence and stability of individual goal orientation profiles and the relationship between individual profiles and professional learning (chapter 3) or the activation of goal orientation profiles using managerial coaching (chapter 4). In Chapter 5, the perspective shifts from individual professional learning towards learning within teacher teams. In this chapter, a systematic literature review of team learning in teacher teams is presented. This study reviews all scientific literature on team learning in teacher teams (N = 20 journal articles) and maps variables that affect team learning, using the Input-Process-Output framework (Ilgen, Hollenbeck, Johnson & Jundt, 2005; Koslowski, 2015). The analysis of quantitative, qualitative and mixed-methods studies contributes to a better understanding of the methods used in teacher team learning research and their results. Based on this review, knowledge gaps and methodological challenges are identified that may be addressed in future research. This chapter addresses research question 5.

Chapter 6: Team learning and its association with the implementation of competence-based education

Chapter 6 addresses the relationship between three predictors of team learning (i.e., task interdependence, collective team identification, and team size), team learning, and teacher perceptions of the implementation of competence-based

education. Using a sample of 1008 teachers from 93 teacher teams, this study adopts a multilevel structural equation modeling approach. This chapter specifically addresses the differences in perceived implementation of competence-based education and in within-team agreement among teachers, in terms of the level of implementation of competence-based education.

Chapter 7: General conclusion and discussion

In chapter 7, I conclude by providing answers to all six research questions, based on the results of the 5 key studies in this dissertation. Thus, the findings of all chapters are synthesized, and it is discussed how the results contribute to the research field of teachers professional development and teachers' professional learning in senior secondary vocational education in the Netherlands. Moreover, based on the answers to the research questions, suggestions for future research are provided. The discussion chapter concludes with practical implications for teachers, managers and educational policy makers.

Table 1.1 - Overview of the chapters in this dissertation and the type of research

Chapter	Title	Research type	Research Question
2	Teachers' goal orientation: a systematic review of literature	Literature review	1
3	Teachers' goal orientation profiles and participation in professional development activities	Empirical study $N_{teachers} = 984$	2, 3
4	Stability and change in teachers' goal orientation profiles over time: Managerial coaching behavior as a predictor of profile change	Empirical study $N_{teachers} = 521$	2, 4
5	Team learning in teacher teams: a systematic review of literature	Literature review	5
6	Team learning and its association with the implementation of competence-based education	Empirical study $N_{teachers} = 1008$ $N_{teams} = 93$	6

CHAPTER 2

Teachers' goal orientations: a systematic literature review[1]

ABSTRACT

The purpose of this systematic review is to provide an overview of research investigating teachers' goal orientations and their correlates. A systematic search resulted in 23 journal articles. Analyses of those articles revealed that teachers' mastery goal orientation was generally positively associated with teachers' well-being, professional learning and mastery-oriented and cognitively stimulating instructional practices while teachers' performance goal orientation was positively related with performance-oriented instructional practices that enhance surface level learning. Measures used for teachers' goal orientations were found to present several methodological challenges. We identify under-explored research areas and formulate a research agenda for future research.

Keywords: *goal orientation, teachers, systematic review*

1 This chapter is under review as Kunst, E.M., Van Woerkom, M., & Poell, R.F. (n.d.). Teachers' goal orientations: a systematic literature review.

CHAPTER
2

1. Introduction

Goal orientations of employees, referring to their preferred goal pursuit in achievement situations (Dweck, 1986; Nicholls, 1984), have been shown to have a considerable impact on their performance and professional development (Nitsche et al., 2013; Runhaar et al., 2010). The main differentiation in goal orientation research is that between mastery and performance goals. Workers with a mastery orientation view challenging tasks as an opportunity for learning and have a continuous focus on the improvement of previous performance (Dweck, 1990; Nitsche et al., 2011). Employees pursuing performance goals are concerned with positive confirmation of demonstrated behavior (Dweck, 1990; Nitsche et al., 2011). Mastery goals are mainly associated with positive outcomes such as self-efficacy, constructive learning strategies, and feedback seeking while performance goal orientations are negatively associated with self-efficacy, cognitive ability, and openness to new experiences (Payne, Youngcourt & Beaubien, 2007).

In the context of teaching, goal orientations are an even more salient notion to take into account. Previous research has shown that teacher's goal orientations do not only influence their own development (Nitsche et al., 2011) but also the classroom environment and the development of their students (Ames, 1992; Daumiller, Grassinger, Dickhauser, & Dresel, 2016). Although meta-analyses have studied goal orientations in the work domain in general (Hulleman, Scharger, Bodmann, & Harackiewicz, 2010; Payne et al., 2007) no review studies or meta-analyses have considered goal orientations of teachers specifically. However, given that teachers are expected to have a predominant orientation on the continuous development of their students (Leroy, Bressoux, Sarrazin, & Trouilloud, 2007) this may cause contextual differences with other occupations in terms of the adoption of goal orientations. Also, studies on teachers' goal orientations use teaching-specific outcomes such as instructional climate (Retelsdorf et al., 2010), student learning (Daumiller et al., 2016) or student behavior (Butler & Shibaz, 2008; Schiefele & Schaffner, 2015). These variables are understandably not included in studies that focus on goal orientation in the broader workforce. Therefore, we decided to conduct a systematic review of literature on teachers' goal orientations.

This systematic review aims to extend our knowledge of teachers' goal orientations. Its intended contribution is twofold. First, by providing an overview of the instruments that have been used to measure teachers' goal orientations we evaluate its construct clarity and contribute to future research design decisions regarding teachers' goal orientations (Molloy & Ployhart, 2012). Second, we provide a state-of-the-art overview of the correlates of teachers' goal orientations. The results of the present study can be used to identify under-explored research areas and to formulate a research agenda for future research on teachers' goal orientations.

1.1. Development of Achievement Goal Orientation Theory in the Work Domain

Achievement goal orientation theory has developed over the past decades (for a detailed historical overview, see Baranik, Barron, and Finney (2007). Over time, the dichotomous use of goal orientations (mastery versus performance goals) has been extended by an approach and avoidance dimension being added, resulting in a 2 x 2 framework of goal orientations (Baranik et al., 2007; Elliot, 1999; Pintrich, 2000). This extension results in a mastery-approach goal orientation referring to a preference to improve competence, and a performance-approach goal orientation referring to a preference to outperform others (Baranik et al., 2007; Elliot & Church, 1997). The avoidance dimension refers to a motivation to avoid negative performance evaluations of others (performance goal orientation) or of oneself (mastery goal orientation) (Elliot & Church, 1997). Hence, a mastery-avoidance goal orientation refers to an inclination to avoid being incompetent compared to one's own standards, while a performance-avoidance goal orientation refers to a tendency to avoid being seen as incompetent by others (Gerritsen, Plug, & Webbink, 2017). Although different synonyms have been used in labeling mastery (e.g., learning, task) and performance goal orientations (e.g., ability, prove) (van Yperen, Blaga, & Postmes, 2015), for clarity purposes in his paper we will use the terms 'mastery' and 'performance' in combination with 'approach' or 'avoidance' to label the four goal orientations.

The 2 x 2 framework ignores the possibility of not endorsing any goal at all. Therefore, Elliot (1999) introduced the construct of the work-avoidance goal

orientation, referring to a preference to complete tasks with the least possible effort. Another extension of the goal orientation framework was initiated by Butler (2012), who added the relational goal orientation for teachers. This goal orientation refers to teachers' motivation to strive for high-quality social relationships with students (Butler, 2012). For this literature review, we systematically searched for empirical studies investigating any of the before mentioned goal orientations of teachers.

2. Method

2.1. Search Terms and Inclusion Criteria

To identify relevant studies, a systematic search was performed in March 2017 in multiple databases (Web of Science, PsycINFO, ScienceDirect, and ERIC). We restricted our search to quantitative studies to enhance comparability of our results. We used multiple search terms to identify papers that refer to achievement goal orientation of teachers in either the title, abstract or keywords: "goal orientation(s)" OR "mastery goal(s)" OR "performance goal(s)" OR "achievement goal(s)" combined with the search term "teachers". This literature search resulted in 82 studies in ScienceDirect, 110 studies in Web of Science, 109 studies in ERIC, and 136 studies in PsycINFO. After removing duplicates using Endnote Software, 298 unique records remained.

Three inclusion criteria were used to select relevant journal articles. First, only articles published in peer-reviewed journals were included to guarantee a minimum quality standard for all papers included. Second, studies were included only if the language of publication was English. Third, only studies that had teachers as primary research sample were included, while studies that used students' perceptions of teachers' goal orientations were excluded.

2.2. Selection of Journal Articles

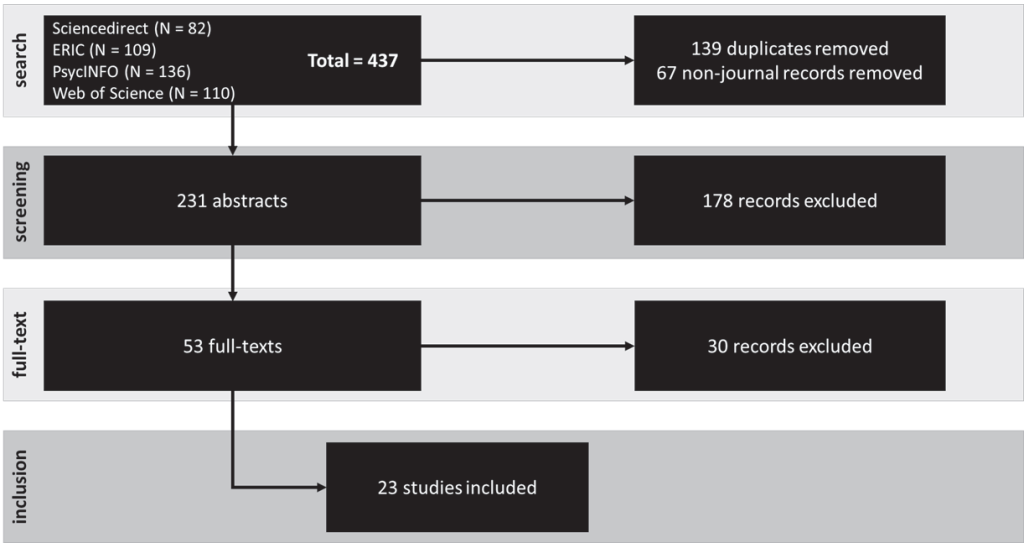
The first author scanned all abstracts. After application of the first criterion and evaluation of the source of the publications, 67 publications did not meet the criterion of being published in a peer-reviewed journal (these 67 included

conference proceedings, research reports, book sections), resulting in 231 journal articles left for abstract inspection. The second criterion covered the language of publications; 5 studies were excluded because the language of publication was not English. The third step evaluated the inclusion of at least one of the teachers' goal orientations in the abstract. Among all abstracts screened, 178 did not refer to teachers' goal orientations; hence, for the remaining 53 records the full-text was read to verify that teachers' goal orientations were indeed used as an actual measure. In this final step 30 studies were excluded because they did not measure teachers' goal orientation but only referred to teachers' goal orientation in text, or used measures that referred to students' perceptions of teachers' goal orientation. This resulted in a final set of 23 studies that remained for final analysis. Figure 2.1 shows the article selection process graphically.

2.3. Analysis of Selected Articles

To address the measurement of teachers' goal orientations, two separate tables were produced: one with study descriptives (year, type of education, sample size, and educational level) and one with the type and frequency of measures used. To address the correlates of teachers' goal orientations, multiple tables

Figure 2.1. Summary of the Search and Article Selection Process



were created to include all variables related to teachers' goal orientations in the 23 studies selected, sorted by theme. Although the included studies addressed antecedents and outcomes of teachers' goal orientations, we chose to interpret the results as correlates of teachers' goal orientations because most studies used a cross-sectional research design. These tables were used as starting point for the synthetization of research results.

3. Results

3.1. Descriptive Characteristics of the Studies Reviewed

A total of 23 articles were used for analysis and synthesis; a detailed overview of article descriptives is presented in Table 2.1. The years of publication ranged from 2008 to 2017. Ten studies were based on German samples (Daumiller et al., 2016; Janke, Nitsche, & Dickhauser, 2015; Kunsting, Neuber, & Lipowsky, 2016; Nitsche et al., 2011, 2013; Paulick, Retelsdorf, & Möller, 2013; Retelsdorf et al., 2010; Retelsdorf & Gunther, 2011; Schiefele, 2017; Schiefele & Schaffner, 2015). Other studies were based on samples from the U.S. (Cho & Shim, 2013; Kilday, Lenser, & Miller, 2016; Shim, Cho, & Cassady, 2013), Israel (Butler & Shibaz, 2008, 2014; Retelsdorf et al., 2010), Greece (Gorozidis & Papaioannou, 2011, 2016), China (Zhang, Law, & Lin, 2016), Norway (Skaalvik & Skaalvik, 2013), Pakistan (Chughtai & Buckley, 2011), Belgium (van Daal et al., 2014), the Netherlands (Runhaar et al., 2010), and Australia (Parker, Martin, Colmar, & Liem, 2012).

Twelve studies included a mixed sample of teachers from various educational levels. The other 11 studies focused on specific educational levels. Two studies were based on a sample of elementary-school teachers, one on a sample of kindergarten teachers; six studies focused on teachers in secondary schools, high schools, or middle schools; one study was conducted in vocational education and one study was executed in higher-education institutes. The number of participants in the studies ranged from 53 in the study of Butler and Shibaz (2008) to 2569 in the study of Skaalvik and Skaalvik (2013). The majority of the studies adopted a cross-sectional design (N = 17), four studies measured teachers' goal orientations at the beginning of a school year and students' perceptions

First Author	Year	Nteachers	Country	Educational level	Scale used1	Included Goal Orientations[2]	Design[3]	Analysis[4]
Butler	2008	53	Israel	Mixed	Butler (2007)	MAP, PAP, PAV, WAV	L	IV
Chughtai	2010	238	Pakistan	High school	Button (1996)	MAP	C	Med
Retelsdorf	2010	281[S1] / 69 [S2]	Germany S1/ IsraelS2	Mixed	Butler (2007)	MAP, PAP, PAV, WAV	C	IV
Runhaar	2010	456	the Netherlands	VET	Vandewalle (1997)	MAP	C	Mod
Gorozidis	2011	290	Greece	High school	Papaioannou (2007)	MAP, PAP, PAV	L	IV
Nitsche	2011	224	Germany	Mixed	Self-developed	MAP, PAP, PAV, WAV	C	IV
Retelsdorf	2011	206	Germany	Not specified	Retelsdorf (2010)	MAP, PAP, PAV, WAV	C	IV
Parker	2012	430	Australia	Mixed	Martin (2006)	MAP, PAV	C	IV
Cho	2013	211	U.S.	Mixed	Butler (2007)	MAP, PAP, PAV	C	DV
Nitsche	2013	224	Germany	Mixed	Nitsche (2011)	MAP, PAP, PAV, WAV	C	IV
Paulick	2013	206 [S2]	German	Secondary school	Retelsdorf (2010)	MAP, PAP, PAV, WAV	C	Med
Shim	2013	209	U.S.	Mixed	Butler (2007)	MAP, PAP, PAV	C	Mod
Skaalvik	2013	2569	Norway	Mixed	Self-developed	MAP, PAP, PAV	C	Med
Butler	2014	341 [S1]	Israel	Mixed	Butler (2012)	MAP, PAP, PAV, WAV, RGO	L	IV
Van Daal	2014	95	Belgium	High schools	Elliot & McGregor (2002)	MAP, PGO	C	Med
Janke	2015	334	Germany	Mixed	Nitsche (2011)	MAP	C	DV
Schiefele	2015	110	Germany	Elementary schools	Retelsdorf (2010)	MAP	C	IV
Daumiller	2016	251	Germany	University	Butler (2012)	MAP, PAP, PAV, WAV, RGO	C	IV/DV
Gorozidis	2016	276	Greece	Secondary school	Papaioannou (2007)	MAP, PAP, PAV	Q-Exp	IV
Kilday	2016	194	U.S.	Mixed	Butler (2012)	MAP, PAP, PAV, WAV, RGO	C	IV
Kunsting	2016	203	Germany	Mixed	Butler (2007)	MAP	L	Med
Zhang	2016	426	China	High schools	Button (1996)	MAP, PGO	L	Mod
Schiefele	2017	110	Germany	Elementary schools	Butler (2007)	MAP	C	IV

Table 2.1 - Overview of the Studies Included in this Review

Notes

1 Only the first author was reported; S1 Study 1; S2 Study 2;
2 MAP = Mastery-approach goal orientation; PGO = Performance-goal orientation (combined approach and avoidance dimension); PAP = Performance-approach goal orientation / Ability-approach goal orientation; PAV = Performance-avoidance goal orientation / Ability-avoidance goal orientation; WAV = Work-avoidance goal orientation, RGO = Relational goal orientation / Social goal orientation ;
3 C = cross-sectional, L = longitudinal, Q-Exp = quasi-experimental;
4 Goal orientation used in analysis as IV = independent variable; DV = dependent variable, Mod = Moderator; Med =Mediator.

of instructional climate or classroom management at a later point in time, and one study used a quasi-experimental design. Goal orientation was mostly used as an independent (N = 12), moderating (N = 3), or mediating (N = 5) variable. Two studies used goal orientation as a dependent variable. Finally, in the study of Daumiller et al. (2016), goal orientation was used as a dependent variable in estimating the relationship with personal (age, gender) and professional characteristics (type of teacher), and as an independent variable when evaluating the relationship between teachers' achievement goals and teaching quality.

3.2. Goal Orientation Measures

Table 2.2 provides an overview of the scales that have been used to measure teachers' goal orientations. The studies included used 10 different instruments for teachers' goal orientations, among which the goal orientation for teaching scale (Butler, 2007, 2012) was the one most often used (N = 8). The teachers' achievement goal questionnaire of Retelsdorf et al. (2010) was used in four studies. The goal orientation for teaching scale by Nitsche et al. (2011), the teachers' achievement goal orientation in work questionnaire (Papaioannou & Christodoulidis, 2007), and the measure of Button et al. (1996) were all used in three studies. Finally, the motivation and engagement scale (Martin, 2006), the measure of teachers' goal orientations by Skaalvik and Skaalvik (2013), the goal orientation in the work domain scale of VandeWalle (1997), and the adjusted version of the Elliot and McGregor (2001) scale were all used in only one study each.

Table 2.2 also presents example items for all teachers' goal orientation measures. Although all scales have in common that they aim to measure teachers' goal orientations, the operationalization of the various constructs was very different.

The first difference concerns the context specificity of the measures. The scales of Butler (2007), Butler (2012), Papaioannou and Christodoulidis (2007), Nitsche et al. (2011), Retelsdorf et al. (2010) and Skaalvik and Skaalvik (2013) referred specifically to the teaching context, whereas the scales of Button et al. (1996), VandeWalle (1997), Martin (2006), Elliot and McGregor (2001) referred to the general work context. The scale that targeted the teaching context most specifically was the scale of Nitsche et al. (2011). These authors developed

different measures for pedagogical, content, and pedagogical-content learning goal orientations. The pedagogical learning goal orientation refers to teachers' aspirations to increase and improve their understanding of difficult situations in class. The content learning goal orientation deals with teachers' willingness to develop oneself regarding subject-specific knowledge and skills. The pedagogical-content subscale refers to teachers' pursuit of tasks that contribute to an improvement of teaching-content specific skills and knowledge.

The second difference concerns the operationalization of the mastery goal orientation. The mastery goal orientation scale of Nitsche et al. (2011) focuses exclusively on improvement of competences, whereas the scale by Vandewalle (1997) focuses exclusively on the interest in challenging tasks (Hulleman et al., 2010). In contrast to the scales of Nitsche et al. (2011) and Vandewalle (1997), the mastery goal orientation measure of Butler (2007) has a broader operationalization, with items referring to improving past performance, eagerness to learn new tasks and self-reflection on one's teaching behavior. The scale by Butler is therefore the only scale that covers the broad concept of mastery goal orientation (Hulleman et al., 2010). While all types of mastery approach goal orientation are expected to be positively related to most outcomes, researchers should be aware that the operationalization of mastery goal orientation differs across the various studies.

A third difference concerns the referents that were used in the performance approach and avoidance scales. In contrast to the other scales, the scale developed by Nitsche et al. (2011) referred to specific stakeholders in the teaching context: the principal, students and colleagues. To this end, three subscales were developed with equal content but varying referents. An example item is: "In my vocation, I aspire to demonstrate to my [colleagues/principal/students/self] that I know more than other teachers." Although the use of different referents provides an addition to the available goal orientation scales, none of the other studies included in the literature review used these scales.

A final difference in the operationalization of goal orientation constructs was found in the measurement of achievement situations. In contrast to the other measures of goal orientations, the performance-approach, performance-avoidance, and work-avoidance goal orientation of Butler (2007) referred to context-specific and observable situations, such as: "Some of my classes were cancelled because pupils were on a school trip". Success in these situations is

Name	N	Achievement goals	Example item
Goal orientation for teaching scale (Butler & Shibaz, 2008)			*Opening stem: Teachers differ in what makes them feel they had a successful day in school; when would you feel that you had a successful day?*
	8	Mastery GO	I saw that I was developing professionally and teaching more effectively than in the past
	7	Ability approach GO	The principal commended me for having higher teaching ability than most of my colleagues
	6	Ability avoidance GO	My class did not do worse than those of other teachers on an exam.
	4	Work avoidance GO	The material was easy and I did not have to prepare lessons.
Goal orientation for teaching scale (Butler, 2012)[1]	3	Relational GO	I would feel most successful as a teacher if I saw that I was developing closer and better relationships with students in my classes
Goal Orietnation (Button et al., 1996)	2	Learning GO	The opportunity to learn new things is important to me
	1	Performance GO	The opinions others have about how well I can do certain things are important to me
Work domain Goal Orientation Instrument (Vandewalle, 1997)	1	Learning GO	I am willing to select a challenging work assignment that I can learn a lot from.
Teachers achievement goal orientation in work questionnaire (Papaioannou & Christodoulidis, 2007)	2	Mastery GO	My goal is to continuously develop my abilities as a teacher.
	2	P-approach GO	I will always try to outperform my colleagues.
	2	P-avoidance GO	I want to avoid teaching tasks in which I may look incapable.

Table 2.2 - Overview of Scales Used to Measure Teachers' Goal Orientations

Note

Only the (sub)scales used in the included articles were reported..

[1] Butler (2012) added a scale for relational goal orientation to the measure of Butler (2008). GO = goal orientation; P-approach GO = Performance-approach goal orientation; P-avoidance GO = Performance-avoidance goal orientation.

Name	N	Achievement goals	Example item
Goal orientations for teaching (Nitsche et al., 2011)	3	Learning GO – Pedagogical	In my vocation, I aspire to increasingly understand complicated class situations
		Learning GO – Content	In my vocation, I aspire to really comprehend the contents of my subject.
		Learning GO – Pedagogical-content	In my vocation, I aspire to improve my pedagogical-content knowledge and competence.
	2	P-approach GO	In my vocation, I aspire to demonstrate my [colleagues/ principal/students/self] that I know more than other teachers.
	2	P-avoidance GO	In my vocation, I aspire my [colleagues/principal/students/self] not to believe I would master my job less sufficient than other teachers.
	2	Work-avoidance GO	In my vocation, I aspire to get through the day with little effort.
Teachers' achievement goal orientation for teaching (Retelsdorf & Gunther, 2011)	4	Mastery GO	I would feel I had a good day at school if something that happened in class made me to want to learn more about teaching
	2	Ability approach GO	I would feel I had a good day at school if my class did better on an exam than those of other teachers
	2	Ability avoidance GO	I would feel I had a good day at school if my class did not any worse than those of other teachers on an exam
	2	Work avoidance GO	I would feel I had a good day at school if I could use materials from previous years and did not have to prepare new lessons.
Motivation and engagement scale (Martin, 2006)	1	Mastery orientation	I feel very pleased with myself when I learn new things in my work.
	1	Failure avoidance	Often the main reason I try at work is because I don't want people to think that I'm incompetent.

Table 2.2 - Overview of Scales Used to Measure Teachers' Goal Orientations (vervolg)

Name	N	Achievement goals	Example item
Teachers' goal orientation (Skaalvik & Skaalvik, 2013).	1	Mastery GO	I feel successful when I get the students to do their best
	1	P-approach GO	I try to show other teachers how good results my students achieve
	1	P-avoidance GO	I often worry about how I am perceived by the school leadership
Achievement goal questionnaire (Elliot & McGregor, 2001)	1	Learning GO	I would like to learn as much as possible during my work.
	1	P-approach GO	It is important for me to do my work better than my colleagues do their work.

Table 2.2 - Overview of Scales Used to Measure Teachers' Goal Orientations (vervolg)

apparently not defined based on teacher motivation but on the performance or actions of students or factors beyond the control of the teacher. The studies that used this specific scale have been marked in all our tables, in order to signal a need for cautious interpretation of the results.

3.3. Correlates of Teachers' Goal Orientations

3.3.1. Leadership and a stimulating school environment

Two studies reported on school goal structure in relationship to teachers' goal orientations (Cho & Shim, 2013; Skaalvik & Skaalvik, 2013) (see Table 2.3). School goal structure refers to the types of goals that are put forward by the management of a school. A mastery goal structure refers to a leader who stimulates a safe learning environment where students and teachers can improve their skills and abilities, while a performance goal structure refers to a school culture with an emphasis on tests, grades, and competition among students or teachers (Skaalvik & Skaalvik, 2013). A mastery goal structure at school level was found to be positively associated with a mastery-approach goal orientation of teachers, whereas a performance goal structure was positively related to the performance-approach orientation of teachers. A mastery goal structure was negatively associated with performance avoidance goals in the study of Skaalvik and Skaalvik (2013), although this association was not found in the study of Cho and Shim (2013). Only one study included perceived leadership style. Runhaar

and colleagues (2010) found a positive association between transformational leadership, in terms of leaders who support followers to develop and improve by inspiring them, and mastery-approach goal orientation of teachers.

3.3.2. Teachers' demographic characteristics and personality

Demographic characteristics were included in five studies. Table 2.4 presents an overview of the results. An inconsistent result was found for the association between mastery-approach goal orientation and gender. Three studies found that women reported higher scores for mastery-approach goal orientation compared to men (Daumiller et al., 2016; Schiefele, 2017; Schiefele & Schaffner, 2015), while two studies found a non-significant association (Runhaar et al., 2010; Zhang et al., 2016). The results of two studies that investigated the association between performance goal orientation and gender were inconsistent (Daumiller et al., 2016; Zhang et al., 2016). While Daumiller et al. (2016) found that men reported higher scores on performance-approach goal orientation, Zhang et al. (2016) did not find a significant association. For performance-avoidance goal orientation, Daumiller et al. (2016) found that men adopted higher levels compared to women.

Runhaar et al. (2010) found that age was negatively associated with a mastery-approach goal orientation; however, this relationship was not confirmed by two other studies (Daumiller et al., 2016; Zhang et al., 2016). Years of experience

Table 2.3 - School Goal Structure and Leadership Related to Teachers' Goal Orientations

	First author (year)	Goal Orientations		
		MAP	PAP	PAV
Transformational leadership	Runhaar (2010)	+		
School mastery goal structure	Cho (2013)*	+	ns	ns
	Skaalvik (2013)	+	ns	-
School performance goal structure	Cho (2013)*	ns	+	ns
	Skaalvik (2013)	ns	+	+

Note

MAP = Mastery-approach goal orientation; PAP = Performance-approach goal orientation; PAV = Performance-avoidance goal orientation.

* Caution is necessary when interpreting these results.

in education was included in three studies. Results indicated that tenure was not (Zhang et al., 2016) or negatively associated with the mastery-approach goal orientation (Gorozidis & Papaioannou, 2011; Runhaar et al., 2010) while tenure was positively related to the performance-approach goal orienation in the study of Zhang et al. (2016) but found to be not significant in the study of Gorozidis and Papaioannou (2011). No assocation was found between tenure and performance avoidance or work avoidance goal orientation (Gorozidis & Papaioannou, 2011). Furthermore, Runhaar et al. (2010) reported a positive correlation between level of education and mastery-approach goal orientation, and no relationship between mastery-approach goal orientation and type of job (teacher, instructor, or student-assistant) in VET colleges. The association between level of education and mastery-approach goal orientation was not found in the study of Zhang et al. (2016). Although no association was found between educational level and goal orientation, perceived over-qualification was found to be positively associated with the performance-approach and mastery-approach goal orientations (Zhang et al., 2016).

Van Daal et al. (2014) studied the association between the Big Five personality characteristics (extraversion, altruism, conscientiousness, openness, and neuroticism) and the learning, performance-approach, and performance-avoidance goal orientations (see Table 2.4). Only conscientiousness and openness were positively related to the mastery-approach goal orientation. For extraversion, altruism and neuroticism no relationships were found with either learning, performance-approach, or performance-avoidance goal orientations.

3.3.3. Teachers' self-efficacy

Teachers' self-efficacy, defined as a teacher's belief in his or her ability to teach was the most frequently studied construct in relation to teachers' goal orientations (N = 13, see Table 2.5). Two studies used a measure for occupational or role-breadth self-efficacy (Runhaar et al., 2010; Zhang et al., 2016) whereas 11 studies used a self-efficacy scale for teaching in general (Cho & Shim, 2013; Daumiller et al., 2016; Kunsting et al., 2016; Nitsche et al., 2011; Schiefele & Schaffner, 2015) or for specific components of teaching such as self-efficacy for engaging students (Kilday et al., 2016), motivating students (Kilday et al., 2016), student-oriented teaching (Gorozidis & Papaioannou, 2011; Kilday et

Table 2.4 - Demographics and Personality Related to Teachers' Goal Orientations

	First author (Year)	Goal Orientations			
		MAP	PAP	PAV	WAV
Demographics					
Age	Runhaar (2010)	-			
	Daumiller (2016)*	ns	ns	ns	
	Zhang (2016)	ns	ns		
Gender (reference = female)	Daumiller (2016)*	+	-	-	
	Schiefele (2015)	+			
	Zhang (2016)	ns	ns		
	Schiefele (2017)	+			
	Runhaar (2010)	ns			
Level of Education	Runhaar (2010)	+			
	Zhang	ns	ns		
Function	Runhaar (2010)	ns			
Tenure	Runhaar (2010)	-			
	Zhang (2016)	ns	+		
	Gorozidis (2011)	-	ns	ns	ns
Perceived over-qualification	Zhang (2016)	+	+		
Personal Characteristics					
Extraversion	Van Daal (2014)	ns	ns	ns	
Altruism	Van Daal (2014)	ns	ns	ns	
Conscientiousness	Van Daal (2014)	+	ns	ns	
Openness	Van Daal (2014)	+	ns	ns	
Neuroticism	Van Daal (2014)	ns	ns	ns	

Note

MAP = Mastery-approach goal orientation; PAP = Performance-approach goal orientation; PAV = Performance-avoidance goal orientation; WAV = Work-avoidance goal orientation; RGO = Relational goal orientation.

*Caution is necessary when interpreting these results.

al., 2016), or developing teaching plans (Gorozidis & Papaioannou, 2011). The general tendency in all these studies was that self-efficacy was positively related to the mastery-approach goal orientation (N = 11, 85 per cent), while in 60 per cent of the studies (N = 6) self-efficacy was positively associated with pursuing the performance-approach goal orientation. Inconsistent findings were found for the performance-avoidance goal orientation, which was once positively (Daumiller et al., 2016), once negatively (Nitsche et al., 2011) and most of the time not related to self-efficacy (N = 7). Self-efficacy was negatively related to the work-avoidance goal orientation (Daumiller et al., 2016; Kilday et al., 2016; Nitsche et al., 2011). Finally, for the relational goal orientation both a positive (Daumiller et al., 2016; Kilday et al., 2016) and a negative relationship with self-efficacy (Gorozidis & Papaioannou, 2011) were reported.

3.3.4. Teachers' motivation

Seven studies addressed teachers' motivation, Table 2.5 provides a summary of the results. All basic needs for intrinsic motivation (autonomy, competence, and relatedness) according to the self-determination theory (Gagné & Deci, 2005) were positively associated with a mastery-approach goal orientation (Janke et al., 2015). Autonomous motivation was positively related to teachers' mastery-approach goal orientation and not related to performance goal orientations, whereas controlled motivation was positively related to performance goal orientations and not to teachers' mastery-approach goal orientation (Gorozidis & Papaioannou, 2016). Paulick et al. (2013) found that choosing the teaching profession because of intrinsic motives was positively associated with the mastery and performance-approach goal orientations; a performance-avoidance goal orientation and work-avoidance goal orientation were positively associated with extrinsic motivation to choose the teaching profession (e.g., financial motives or social influences from family and friends).

3.3.5. Teacher professional development

Six studies addressed one or multiple professional development activities of teachers (see Table 2.6). Formal professional development activities were studied by Nitsche et al. (2013), who found that the mastery-approach goal orientation was positively, and the work-avoidance goal orientation negatively, related to the number of workshops attended and a beneficial attitude towards further

Table 2.5 - Teacher Self-efficacy and Teacher Motivation Related to Teachers' Goal Orientations

	First author (Year)	Goal Orientations				
		MAP	PAP	PAV	WAV	RGO
Self-efficacy						
Occupational self-efficacy	Runhaar (2010)	+				
Role-breadth self-efficacy	Zhang (2016)	+	+			
Self-efficacy for teaching	Nitsche (2011)*	+	+	-	-	
	Cho (2013)	+	+	ns		
	Schiefele (2015)	+				
	Daumiller (2016)*	+	+	+	-	+
	Künsting (2016)*	+				
Self-efficacy for …						
… student engagement	Kilday (2016)*	+	ns	ns	ns	+
… students' motivation	Kilday (2016)*	+	ns	ns	-	ns
… promoting students' self-regulation	Gorozidis (2011)	+	+	ns		-
… student-centered teaching styles	Gorozidis (2011)	ns	+	ns		-
… student-oriented teaching	Kilday (2016)*	+	ns	ns	-	+
… teaching plans	Gorozidis (2011)	ns	ns	ns		-
Motivation						
Motivation for teacher education						
… subject interest	Schiefele (2015)	+				
… ability beliefs	Paulick (2013)	+	+	ns	-	
… social influences	Paulick (2013)	ns	ns	+	+	
… interest	Paulick (2013)	+	+	ns	-	
… subject-specific interest	Paulick (2013)	+	+	+	ns	
… utility	Paulick (2013)	ns	ns	+	+	
Motivation for teaching – didactic interest	Schiefele (2015)	+				
	Schiefele (2017)	+				
Motivation for teaching – educational interest	Schiefele (2015)	+				
	Schiefele (2017)	+				

Table 2.5 - Teacher Self-efficacy and Teacher Motivation Related to Teachers' Goal Orientations (vervolg)

	First author (Year)	Goal Orientations				
		MAP	PAP	PAV	WAV	RGO
Interest in teaching	Retelsdorf (2010)	+	ns	ns	-	
Enthusiasm for subject	Daumiller (2016)*	ns	ns	ns	-	ns
Perceived autonomy	Janke (2015)*	+				
Perceived competence	Janke (2015)*	+				
Perceived relatedness	Janke (2015)*	+				
Intrinsic work motivation	Janke (2015)*	ns				
Autonomous motivation	Gorozidis (2016)	+	ns	ns		
Controlled motivation	Gorozidis (2016)	ns	+	+		

Note.

MAP = Mastery-approach goal orientation; PAP = Performance-approach goal orientation; PAV = Performance-avoidance goal orientation; WAV = Work-avoidance goal orientation; RGO = Relational goal orientation.

* Caution is necessary when interpreting the results.

training. The performance-avoidance goal orientation was negatively related to a beneficial attitude of teachers towards further training. The performance-approach goal orientation was not associated with attitude towards training or attendance of workshops. A mastery-approach goal orientation was positively related to informal learning activities such as seeking feedback (Chughtai & Buckley, 2011; Runhaar et al., 2010), informal interaction and experimentation (van Daal et al., 2014), reflection (Runhaar et al., 2010), and communication about errors (Chughtai & Buckley, 2011). Teachers' mastery-approach goal orientation was positively related to seeing the benefit of seeking feedback, while teachers' performance-avoidance goal orientation was positively related to perceiving asking for feedback as a threat (Nitsche et al., 2011). Performance-approach goal orientation was positively associated with informal interaction among colleagues (van Daal et al., 2014).

3.3.6. Teachers' well-being and behavior at work

Teachers' well-being and behavior at work was addressed in six studies (for an overview see Table 2.6). The mastery-approach goal orientation was found to be positively associated with engagement and job satisfaction (Skaalvik & Skaalvik, 2013), and negatively associated with burnout (Parker et al., 2012; Retelsdorf et al., 2010), number of days reported sick, and perceived occupational strain (Nitsche et al., 2013). Performance-avoidance goal orientation was negatively related to job satisfaction, while pursuit of performance-approach goals was not related to job satisfaction (Skaalvik & Skaalvik, 2013). Moreover, performance approach, performance avoidance, and work avoidance goal orientations were positively associated with perceived occupational strain (Nitsche et al., 2013). In the study of Parker et al. (2012), the performance-avoidance goal orientation (operationalized as fear of failure) was strongly associated with lower levels of work engagement and higher levels of burnout via emotional-focused coping. A mastery-approach goal orientation was positively associated with problem-focused coping (the willingness to solve problems) and negatively associated with emotional-focused coping (self-handicapping, procrastination), while opposite results were found for the performance-avoidance goal orientation (Parker et al., 2012).

3.3.7. Instructional practices

The impact of goal orientations on instructional practices used was a frequent topic of study (N = 8, Table 2.7). Mastery-oriented instructional practices refer to teachers' emphasis on the value of developing new knowledge and skills. A teachers' mastery-approach orientation was positively, and a teachers' performance-approach orientation negatively, related to mastery-oriented instructional practices. (Retelsdorf et al., 2010; Schiefele & Schaffner, 2015; Shim et al., 2013). Teachers' mastery-approach goal orientation was positively related to cognitively stimulating instructional practices, referring to instructional practices that focus on enhancement of deep-level learning processes (Butler & Shibaz, 2014; Kunsting et al., 2016; Retelsdorf et al., 2010; Schiefele & Schaffner, 2015). A mastery-approach goal orientation was positively associated with teachers' adoption of an incremental implicit theory of students' intelligence (Shim et al., 2013), comparing students' performance with their previous performance instead of the performance of others (Retelsdorf & Gunther, 2011), and using

Table 2.6 - Teachers' Goal Orientations and Professional Development, Well-Being, and Behavior at Work

	First author (Year)	Goal Orientation			
		MAP	PAP	PAV	WAV
Professional development					
Attitude towards further training	Nitsche (2013)*	+	ns	-	-
Number of attended training workshops	Nitsche (2013)*	+	ns	ns	-
Perceived benefit of help-seeking	Nitsche (2011)*	+	ns	ns	ns
Perceived threat of help-seeking	Nitsche (2011)*	ns	ns	+	ns
Feedback seeking behavior	Chughtai (2010)	+			
	Runhaar (2010)	+			
Reflection	Runhaar (2010)	+			
Error communication	Chughtai (2010)	+			
Informal interaction	Van Daal (2014)	+	+		
Experimentation	Van Daal (2014)	+	ns		
Teachers' well-being					
Engagement	Parker (2012)	+		-	
	Skaalvik (2013)	+	ns	-	
Burnout	Retelsdorf (2010)	-	ns	+	+
	Parker (2012)	-		+	
Job satisfaction	Skaalvik (2013)	+	ns	-	
Perceived occupational strain	Nitsche (2013)*	-	+	+	+
Number of reported sick-days	Nitsche (2013)*	+	ns	ns	ns
Behavior at Work					
Problem-focused coping	Parker (2012)	+		-	
In-role job performance	Chughtai (2010)	+			
Emotional-focused coping	Parker (2012)	-		+	
Perceived over-qualification	Zhang (2016)	+	+		
Negative affectivity	Zhang (2016)	-	ns		
Pro-self proactive behavior	Zhang (2016)	ns	ns		

Table 2.6 - Teachers' Goal Orientations and Professional Development, Well-Being, and Behavior at Work (vervolg)

	First author (Year)	Goal Orientation			
		MAP	PAP	PAV	WAV
Pro-other proactive behavior	Zhang (2016)	ns	+		
Pro-organizational proactive behavior	Zhang (2016)	ns	+		

Note.

MAP = Mastery-approach goal orientation; PAP = Performance-approach goal orientation; PAV = Performance-avoidance goal orientation; WAV = Work-avoidance goal orientation; RGO = Relational goal orientation.

* Caution is necessary when interpreting the results.

supportive and effective classroom management (Kunsting et al., 2016).

A performance-approach goal orientation was positively related to teachers using social reference norms and performance-oriented instructional practices (Paulick et al., 2013; Retelsdorf et al., 2010; Shim et al., 2013). These practices focus on the result of task execution by social comparison, emphasizing that it is important for students to outperform other students (Retelsdorf & Gunther, 2011). This positive relationship was also found between performance-approach goal orientation and the promotion of surface learning (Retelsdorf et al., 2010) as well as comprehensive learning (Paulick et al., 2013). The performance-avoidance goal orientation was positively associated with teachers' use of social reference norms (Retelsdorf & Gunther, 2011), use of disciplinary means (e.g., punishment) in the classroom (Paulick et al., 2013), and promotion of surface learning (Paulick et al., 2013; Retelsdorf & Gunther, 2011). Butler and Shibaz (2014) found a positive relationship between the relational goal orientation on the one hand, and providing cognitively stimulating instruction and social support to students on the other hand. However, in the majority of studies (18 out of 24 for performance-approach, 16 out of 24 for performance-avoidance, 17 out of 21 studies for work-avoidance) that included the relationship between teachers' performance and/or work avoidance goal orientations on the one hand and instructional practices on the other hand, no significant association was found

Table 2.7 - Teachers' Goal Orientations and Educational Outcomes

	First Author (year)	Goal Orientations				
		MAP	PAP	PAV	WAV	RGO
Students perception of teachers behavior						
Perceived teacher support	Butler (2008)*	+	ns	-	ns	
Perceived teacher inhibition	Butler (2008)*	-	ns	+	ns	
Adaptive help-seeking	Butler (2008)*	+	ns	ns	ns	
	Butler (2014)*	ns	ns	ns	ns	+
Student interest	Butler (2014)*	+	ns	ns	ns	+
Student subject interest	Schiefele (2015)	+				
	Schiefele (2017)	+				
Cheating	Butler (2008)*	ns	ns	+	ns	
Students' mastery goals	Schiefele (2015)	+				
	Schiefele (2017)	+				
Student-reported mastery practices	Schiefele (2015)	+				
	Schiefele (2017)	+				
Student-reported cognitively activating practices	Schiefele (2015)	+				
Student learning	Daumiller (2016)*	+	ns	-	-	ns
Students' evaluations of educational quality	Daumiller (2016)*	+	ns	-	ns	ns
Students' perceived classroom management	Schiefele (2017)	+				
Instructional practices						
Mastery-oriented instructional practices	Retelsdorf (2010)	+	ns	ns	ns	
	Schiefele (2015)	+				
	Shim (2013)*	+	ns	ns		
Performance-oriented instructional practices	Retelsdorf (2010)	ns	+	ns	+	
	Shim (2013)*	ns	+	ns		
Discipline	Paulick (2013)	ns	+	+	ns	
Effective classroom management	Künsting (2016)*	+				
Social orientation	Paulick (2013)	ns	ns	ns	ns	
Social support	Butler (2014)*	ns	ns	ns	ns	+

Table 2.7 - Teachers' Goal Orientations and Educational Outcomes (vervolg)

	First Author (year)	Goal Orientations				
		MAP	PAP	PAV	WAV	RGO
Supportive classroom climate	Künsting (2016)*	+				
Implicit theory of students' intelligence	Shim (2013)*	-	ns	ns		
Cognitively stimulating instructional practices	Butler (2014)*	+	ns	ns	ns	+
	Schiefele (2015)	+				
	Retelsdorf (2010)	+	ns	ns	ns	
	Künsting (2016)*	+				
Promotion of comprehensive learning	Retelsdorf (2011)	ns	ns	ns	ns	
	Paulick (2013)	ns	+	ns	ns	
Promotion of surface learning	Retelsdorf (2011)	ns	+	ns	ns	
	Paulick (2013)	ns		+	ns	
Social reference norm	Retelsdorf (2011)	-	+	+	+	
Individual reference norm	Retelsdorf (2011)	+	ns	ns	-	
Teachers' self-regulation scale	Van Daal (2014)	+	ns			

Note.

MAP = Mastery-approach goal orientation; PAP = Performance-approach goal orientation; PAV = Performance-avoidance goal orientation; WAV = Work-avoidance goal orientation; RGO = Relational goal orientation.

* Caution is necessary when interpreting the results.

(see Table 2.7 for a complete overview of unsupported relationships between goal orientations and instructional practices).

Teachers' mastery-approach goal orientation was positively related to students' perceptions of the teacher using mastery-oriented or cognitively stimulating instructional practices (Schiefele, 2017; Schiefele & Schaffner, 2015). Moreover, to the extent that teachers endorsed a mastery-approach goal orientation, students reported higher levels of mastery goals themselves (Schiefele, 2017; Schiefele & Schaffner, 2015). Students' evaluations of education quality were positively associated with teachers' mastery-approach goal orientation and negatively with a performance-avoidance goal orientation, while teachers' performance-approach and work-avoidance goal orientations were not

related to perceived educational quality (Daumiller et al., 2016). Teachers' performance-avoidance goal orientation was positively related to students' cheating behavior in one study (Butler & Shibaz, 2008). Teachers' mastery-approach goal orientation was positively related to their perceived support for help-seeking (Butler & Shibaz, 2008), adaptive help-seeking of students, and students' subject interest (Butler & Shibaz, 2014; Schiefele, 2017; Schiefele & Schaffner, 2015).

3.3.8. Educational innovation

One study (Gorozidis & Papaioannou, 2011) explored the relationship between teachers' goal orientations and the willingness to implement a new curriculum. Teachers with a mastery-approach goal orientation were more willing to implement a new curriculum, mediated by their self-efficacy. Performance-approach goals indirectly and positively influenced the implementation of a new curriculum via increased self-efficacy and positive experiences with implementation of innovations in the past.

3.4. Teachers' Goal Orientations as Mediating Variable

In five studies (Chughtai & Buckley, 2011; Kunsting et al., 2016; Paulick et al., 2013; Skaalvik & Skaalvik, 2013; van Daal et al., 2014) teachers' goal orientations were used as a mediator, transmitting the influence of one variable on another. The mastery-approach goal orientation mediated the positive relationship between conscientiousness and informal interaction (van Daal et al., 2014) and partially mediated the positive relationship between self-efficacy and classroom climate (Kunsting et al., 2016). Moreover, the mastery-approach orientation was found to be a mediator between perceived mastery goal structure and two types of work-related behavior: work engagement and job satisfaction (Skaalvik & Skaalvik, 2013). Chughtai and Buckley (2011) found mastery-approach goal orientation to be a mediator between on the one hand organizational identification and on the other hand, feedback seeking behavior and error communication. The same authors found mastery-approach goal orientation to mediate between organizational identification and in-role job performance.

No significant result was found for the mediating role of the mastery-approach goal orientation between openness and informal interaction, openness and experimentation, and between conscientiousness and experimentation

(van Daal et al., 2014). Moreover, no significant mediating role for mastery-approach goal orientation was found for the relationship between self-efficacy and classroom management, and between self-efficacy and cognitive activation (Kunsting et al., 2016). The same was found for mastery-approach goal orientation as a mediator between performance goal structure and work-related motivation (Skaalvik & Skaalvik, 2013).

Performance-approach goal orientation mediated the relationship between performance goal structure and work-related motivation (Skaalvik & Skaalvik, 2013). This result illustrates that schools that emphasize structure, rules and regulations negatively affect teachers' work motivation via the performance-approach goal orientations of their teachers. Moreover, performance-approach goal orientation positively mediated the relationship between subject-specific interest and comprehensive learning (Paulick et al., 2013) and between educational interest and comprehensive learning (Paulick et al., 2013). This shows that teachers' motivation to choose teacher education because they want to contribute to education and children's development, as well as their preference to learn a lot within their subject area, both have a positive association with instructional practices related to comprehensive learning via performance-approach goal orientation. While the performance-approach goal orientation was included as a mediator in the relationship between mastery goal structure and work-related motivation (Skaalvik & Skaalvik, 2013), between educational interest and discipline (Paulick et al., 2013) and between subject-specific interest and discipline (Paulick et al., 2013), these indirect relationships were not significant. Furthermore, the performance-avoidance goal orientation positively mediated the relationship between mastery goal structure and work-related motivation, although this indirect relationship was rather small (standardized indirect effect = .023) (Skaalvik & Skaalvik, 2013). Moreover, performance-avoidance goal orientation negatively mediated the relationship between performance goal structure and work-related motivation (Skaalvik & Skaalvik, 2013), and negatively mediated the relationship between utility motivation to become a teacher and social orientation (Paulick et al., 2013). The performance-avoidance goal orientation was not a significant mediator in the relationship between utility and comprehensive learning (Paulick et al., 2013). Finally, the work-avoidance goal orientation mediated the positive relationships between educational interest and comprehensive learning, and between utility and comprehensive learning (Paulick et al., 2013).

3.5. Teachers' Goal Orientations as Moderating Variable

Three studies included teachers' goal orientations as a moderator (Runhaar et al., 2010; Shim et al., 2013; Zhang et al., 2016). Runhaar et al. (2010) found that the relationships between, on the one hand, transformational leadership and, on the other hand, teachers' reflective behavior and asking for feedback were stronger for teachers with a low mastery-approach goal orientation. For teachers that scored high on mastery-approach goal orientation, no significant influence on the relationship between transformational leadership and reflection was found. Furthermore, mastery-approach goal orientation weakened the positive relationship between transformational leadership and asking for feedback.

Shim et al. (2013) found that for teachers with low mastery goals, a high performance-approach goal orientation resulted in a higher perceived level of a mastery classroom goal structure while for teachers with a high mastery goal structure, a low performance-approach goal orientation contributed to a higher perceived level of a mastery classroom goal structure. Furthermore, Shim et al. (2013) showed that a performance-avoidance goal orientation was negatively related to a performance classroom goal structure when teachers adopt an entity view (defining intelligence as a stable trait), while this relationship was not significant for teachers with an incremental view (defining intelligence as a malleable trait).

Zhang et al. (2016), reported that a mastery-approach goal orientation weakened the positive relationship between perceived over-qualification and RBSE among teachers (for low mastery-approach goal orientation) and that the performance-approach goal orientation strengthened this positive relationship (for high performance-approach goal orientation). Furthermore, Zhang et al. (2016) evaluated the role of mastery-approach and performance goal orientations as moderators between RBSE and two types of pro-active behavior (pro-organizational and pro-other). Only a significant moderating role for performance-approach goal orientation was found. Performance goal orientation strengthened the positive relationship between RBSE and pro-organizational and pro-other pro-active behavior. For high levels of performance goal orientation, this

moderating effect was present while for a low performance goal orientation no significant chance was measured.

4. Discussion

This review aimed to gain insight in the current state of research into goal orientations of teachers by systematically reviewing the outcomes and methodological aspects of 23 empirical studies. We will first discuss the general conclusions for the goal orientations and the saturated and unsaturated areas of research. Second, we will reflect on the research and measures of teachers' goal orientation used. We conclude with limitations of this review and recommendations for future research.

4.1. General discussion of the correlates of teachers' achievement goals

Overall, it can be concluded that a mastery-approach goal orientation is positively associated with professional development, well-being, job performance, cognitively stimulating and mastery-oriented instructional practices and positive students' perceptions of teachers' behavior. Because the mastery-approach goal orientation focuses on improving competence relative to previous performance and self-set goals, the positive associations with motivation and professional development are not surprising. Moreover, a mastery goal orientation seems to function as a personal resource for teachers at work because it is associated with higher levels of work engagement (Parker et al., 2010; Skaalvik & Skaalvik, 2013), lower levels of burnout (Parker et al., 2012; Retelsdorf et al., 2010), and lower levels of perceived occupational strain (Nitsche et al., 2013). Also, mastery goal orientation was frequently positively associated with classroom-level variables, such as positive students' perceptions of teacher behavior, teachers' intended learning-oriented instructional practices, and students' mastery-approach goal orientations. Teachers who have a mastery-approach goal orientation, might transfer this type of achievement motivation to their students by investing in instructional practices that are mastery oriented and by emphasizing that students need to improve their performance relative to

their own performance, instead of relative to the performance of others.

For performance-approach goals the majority of the associations under investigation were not significant. However, teachers' performance-approach goals were positively associated with teachers' self-efficacy, motivation and specific variables that have a strong link with demonstrating competence to others (e.g., performance-oriented instructional practices or pro-active behavior). Although many studies included performance-approach goal orientation in research models that studied the impact on instructional practices, they yielded positive significant results for only four variables (performance-oriented instructional practices, discipline, promotion of surface learning, and promotion of comprehensive learning). Performance-approach goal orientations seemed to have no impact on students' perceptions of teachers' behavior. The absence of impact is interesting theoretically because one would assume that teachers with high levels of performance-approach goals would stimulate students to improve performance and demonstrate high levels of competence. Although no longitudinal studies were included that studied the impact of teachers' goal orientations on students' learning for a longer period of time, we tentatively draw the conclusion that the presence or absence of teachers' performance-approach goal orientations generally do not harm but also do not stimulate students' learning. However, more research is needed to explore if the association between performance-approach goal orientations and performance-related outcomes is detrimental for student outcomes and achievement over a longer period of time.

Similar to performance-approach goal orientations, performance-avoidance goal orientations were mainly not significantly associated with predictors or outcomes. When associations were found to be significant, these associations were mainly negative (well-being, students' perceptions of teachers' behavior, professional development). These findings are in line with existing studies in the work context regarding performance-avoidance goals (Payne et al., 2007) . For teachers with high levels of performance-avoidance goal orientations, the fear of being perceived as incompetent is a costly drain of energy that diminishes overall task motivation. In the studies included in our review, performance-avoidance goals were predominantly associated with lower levels of engagement and job satisfaction, and with higher levels of burnout and

perceived occupational strain. Moreover, higher levels of performance-avoidance goal orientations were negatively associated with students' perceptions of teacher support and with their evaluation of educational quality. Following a similar line of reasoning for performance-approach goals, performance-avoidance goals seem not to support or harm students' perceptions of teachers' instructional practices in use. Nevertheless, the significant results found for performance-avoidance goal orientations need to be taken into account because teachers' well-being and a negative attitude towards professional development contribute to inadequate performance of teachers. Therefore, future research that takes into account predictors that could reduce performance-avoidance goal orientation is necessary.

Regarding the use of teachers' goal orientations in empirical research, two further remarks can be made. First, although Elliot and McGregor (2001) introduced the concept of mastery-avoidance goal orientation in early 2000 and de Lange, Van Yperen, Van der Heijden, and Bal (2010) found that this was the second most adopted goal orientation by adults, none of the studies in our review included this variable. Mastery-avoidance goal orientation refers to the motivation to avoid feeling incompetent in the execution of tasks at work compared to self-set standards and previous levels of performance (Baranik, Stanley, Bynum, & Lance, 2010; Elliot & Mcgregor, 2001). In the perspective of continuous professional development of teachers, taking into account mastery-avoidance goal orientation in future research would be valuable to explore how teachers' motives for continuous development change over time.

Second, the relational goal orientation was specifically defined as an extension of the 2 x 2 framework of teachers' goal orientation, with a focus on striving to obtain good interpersonal relationships with students as an achievement goal (Butler, 2012). The relational goal orientation was positively related to higher scores of teachers' self-efficacy and cognitively stimulating instructional practices (Butler & Shibaz, 2014). Moreover, a relational goal orientation of teachers was positively associated with students' ability to seek help if needed (Butler & Shibaz, 2014). However, because only few studies included relational goal orientations of teachers, future research is needed to establish the unique value of this teacher goal orientation for students' outcomes.

4.2. Saturated and Unexplored Areas in Teachers' Goal Orientation Literature

Reflecting on the main topics and variables studied in association with teachers' goal orientations, both saturated and unexplored areas can be identified. A saturated research area concerns the association between goal orientations on the one hand and teachers' self-efficacy on the other hand. The main effects of mastery goal orientations and performance-approach goal orientations on self-efficacy were positive, demonstrating that teachers who aim for continuous development or high performance believe that they are capable to complete tasks successfully. Although one could expect a negative association between performance-avoidance goals and self-efficacy (Payne, et al., 2007), the studies included in our review predominantly found non-significant results.

Furthermore, in more than half of the studies, goal orientations were included as independent variables and although these (mostly) cross-sectional studies provide valuable insights into the impact of goal orientations on (context-specific) outcomes, this does not take into account the conditions that affect levels of goal orientations. In our literature review, studies that included school level predictors of teachers' goal orientation were scarce and considered only school goal structure (Cho & Shim, 2013; Skaalvik & Skaalvik, 2013) and transformational leadership specifically (Runhaar et al., 2010). In other words, the activation of teachers' goal orientations (DeShon & Gillespie, 2005; Tett & Burnett, 2003; van Yperen et al., 2015) is relatively unexplored as yet. Although the number of existing studies on this topic is still low, their results are promising; for instance, transformational leadership and a management stimulated climate for learning (mastery goal structure) demonstrated to be positive stimuli for teachers' mastery goal orientation. This result is in line with other studies that found a positive relationship between transformational leadership and mastery goal orientations in various industries (Hamstra et al., 2014; Sosik et al., 2004; Yee et al., 2013). Given the positive relationships between mastery goal orientations and a diversity of beneficial outcomes (work engagement, professional learning, self-efficacy, beneficial instruction practices) it is highly relevant for future studies to include variables such as leadership styles (Kunst, van

Woerkom, van Kollenburg, & Poell, 2018) or organizational climates that could activate higher levels of mastery goal orientations. For example, future studies might investigate whether a school goal structure that emphasizes learning and development instead of performance targets might stimulate teachers' individual mastery goal orientations and in turn encourage teachers' work engagement, feedback seeking, motivation for teaching, and in-role job performance.

4.3. Research Designs and Teachers' Goal Orientations Research

This review demonstrates that the research field of teachers' goal orientations is characterized by cross-sectional studies that investigate associations instead of causal relations. With the exception of five studies (Butler & Shibaz, 2008, 2014; Gorozidis & Papaioannou, 2011; Kunsting et al., 2016; Zhang et al., 2016), the majority of studies had a cross-sectional design. The studies that tested mediation or structural models were also based on cross-sectional data and therefore the results of these studies could be misleading (Maxwell & Cole, 2007). This is especially relevant for relationships that can be hypothesized in two directions, such as the relationship between teachers' goal orientations and their self-efficacy (Cho & Shim, 2013; Gorozidis & Papaioannou, 2011; Kilday et al., 2016).

Although the attempt by Kunsting et al. (2016) to evaluate mediation with three different measurements is a step in the direction of a preferred longitudinal design, this study did not include multiple measurements of goal orientations and related variables, making it impossible to get insight in how goal orientations can be activated. Therefore, to increase our understanding of the direction of the causal relationships that teachers' goal orientations have with other variables, we call for more longitudinal research designs. Future research that is based on a longer period of time and multiple measurements can improve our insight into the long-term impact of teachers' goal orientations and the specific moments in a teacher's career when goal orientations might be susceptible to change (Button et al., 1996; Praetorius et al., 2014).

4.4. Measures Used for Teachers' Goal Orientations

Based on our review we can conclude that there is no consensus regarding measures for teachers' goal orientations. Whereas some studies are based on

measures that are specific for the educational context, other studies employ more general goal orientation measures. Measures specifically designed for the educational context will be more recognizable for teachers; however, these measures make it more difficult to compare results to studies on goal orientations in other work domains. Therefore we would like to call for the use of scales that are validated in the broader work domain (Baranik et al., 2007; Button et al., 1996; VandeWalle, 1997) in combination with context-specific antecedents (e.g., related to school leadership) and outcome variables (e.g., instructional practices) to increase the practical value of these studies for the teaching profession.

Moreover, we noticed that some educational-context specific measures were not in line with goal achievement theory and seem to refer to teachers' opinions about the performance of their students (e.g., "My class did not do worse compared to other students"; Butler & Shibaz, 2008) or to factors beyond the reach of teachers ("Some of my classes were cancelled", Butler & Shibaz, 2008). The use of these measures is not recommended in goal orientation research because it hinders the interpretation of results.

4.5. Limitations and Future Research

One limitation of this systematic review is the relatively low number of studies that focus on teachers' goal orientations, in combination with the wide scope of these studies and the diversity of instruments used to measure goal orientations. The generalizability of the results to the entire population of teachers is therefore limited. Despite this limitation, our systematic review provides an overview of existing research in the field of teachers' goal orientations and thereby indicates which fields of research would need more attention.

The scope of our literature review was limited to goal orientations of teachers only. Although this narrow focus contributes to the call for contextualization of research results (Johns, 2006) and is suitable to increase our understanding of the implications of teachers' goal orientations for the educational setting, studies that compare different occupations are particularly valuable to improve knowledge on context-specific characteristics of goal orientations. For example, a study employing a research design that compares occupations characterized by a similar remuneration system (i.e., nursing, teaching) to occupations

characterized by a contrasting remuneration system (i.e., sales, consultancy) can provide a detailed insight into generalizable and context-specific components of goal orientations.

Finally, although a large number of studies in this systematic review included goal orientation structures with two, three, four, or even five different goal orientations, none of the studies adopted a multiple goal orientation approach, thereby neglecting the possibility that individuals pursue multiple goal orientations at the same time (Pastor et al., 2007). This profile approach, studying combinations of goal orientation within individuals, has been broadly adopted for students' goal orientations in the past years (Jansen in de Wal et al., 2015; Kolić-Vehovec et al., 2008; Luo et al., 2011; Pastor et al., 2007; Pulkka & Niemivirta, 2013; Schwinger et al., 2012; Shim & Finch, 2014; Tuominen-Soini et al., 2008, 2011, 2012). This approach is not yet frequently applied using samples of teachers (Kunst, van Woerkom, & Poell, 2018; Kunst et al., 2018). Future research using goal orientation profiles linked to predictors and outcomes could, for example, provide more insight in the role of mastery-approach goal orientation as a buffer when teachers also have a strong performance-avoidance goal orientation.

Based on the number of journal articles published in the last 5 years, we can conclude that research on teachers' goal orientations is on the rise and has resulted in valuable insights regarding the impact of teachers' goal orientations on instructional practices, their professional learning and work behavior. However, still a lot of progress can be made in terms of research designs, measures used, and extending our knowledge about predictors of teachers' achievement goals.

CHAPTER 3

Teachers' Goal Orientation Profiles and Participation in Professional Development Activities[2]

ABSTRACT

Participation in professional development activities is important for teachers to continuously improve their knowledge and skills. However, teachers differ in their attitude towards learning activities. This paper examined how different goal orientation profiles are related to participation in professional development activities (acquiring information and asking feedback). To this end, we conducted latent profile analysis based on a sample of 984 teachers in vocational education. Five profiles were identified: diffuse (50.1%), moderate learning (12.3%), high avoidance (10.9%), performance oriented (15.9%) and success oriented (10.7%). Furthermore, means of acquiring information and asking feedback from teachers were compared across the profiles. Teachers with a success-oriented profile (high learning and performance approach goals) scored significantly higher while teachers with a high-avoidance profile scored significantly lower on asking for feedback and acquiring information. Exploration of background characteristics indicated that age, gender and work experience outside education were related to the goal orientation profiles. Our findings show that goal orientation profiles can be used to explain individual differences in teachers' propensity to engage in professional development activities.

Keywords: *goal orientation, teachers, asking feedback, information acquisition, latent profile analysis, professional development*

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CHAPTER

3

1. Introduction

Participation in professional development activities is important for teachers to continuously improve their knowledge and skills. However, research shows that teachers differ strongly in how actively they engage in formal and informal learning activities such as seeking information, participation in workshops in- or outside the school, and asking for feedback (Kwakman, 2003; Lohman, 2005; Opfer & Pedder, 2011; Runhaar et al., 2010). It is likely that teachers' motivation to participate in professional development activities is related to their goal orientation (Nitsche et al., 2013; Van Eekelen, Vermunt, & Boshuizen, 2006).

Achievement goal theory (Ames & Ames, 1984; Dweck, 1986, 1990; Nicholls, 1984) posits that individuals can strive for learning goals, performance approach goals and performance avoidance goals (VandeWalle, 1997). Learning goals refer to the individual's intention to develop competencies, knowledge or skills. Individuals with a learning goal orientation view challenging tasks as an opportunity for learning, and interpret failures as a starting point for learning (Dweck, 1990). Performance approach and avoidance goals refer to the tendency to be concerned with positive confirmation of demonstrated behavior from others. The relative standard that performance oriented individuals are comparing themselves with can include both external factors (such as colleagues, performance norms) and internalized standards (for example, individual expectations, or previous performance levels) (Van Yperen, 2006). Performance approach goals are associated with demonstrating high performance to others, whereas performance avoidance goals are characterized by avoiding the demonstration of incompetence (VandeWalle 1997).

Although many authors assume that individuals have a single dominant goal orientation, the multiple goal orientation perspective is more and more accepted in research (Payne, Youngcourt, & Beaubien, 2007) and several qualitative studies give vivid descriptions of students pursuing multiple goals (Lee & Anderson, 1993; Levy, Kaplan, & Patrick, 2004). Coexistence of multiple goal orientations builds on the interactive goal hypothesis proposed by Barron and Harackiewicz (2001) which is based on the idea that all three goal orientations are represented within a person, but that the level of goal orientations can vary

between persons depending on personality and situational cues (Luo et al. 2011). Barron and Harackiewicz (2001) posit that the interactive effect of different goal orientations will potentially explain more variance in performance and learning compared to the additive effects. Different combinations of goal orientations may boost each other or work as a buffer to diminish negative effects of specific goal orientations. For example, a teacher that scores high on both the learning and performance-avoidance goal orientation is eager to try out new tasks at work and at the same time concerned with the negative judgement of others if these innovations would fail. In this case the learning goal orientation may function as a buffer and reduce the negative impact of the performance-avoidance goal orientation, possibly resulting in a tendency to start experimenting with small educational innovations with a high chance of success. Studies investigating the additive effects of goal orientations often take a variable-centered approach (Pastor et al., 2007), using multiple regression analysis or correlational analysis to study the associations between single goal orientations and various outcomes (i.e. learning attitude or task performance) (Pastor et al., 2007). However, the variable-centered approach does not take into account mutually occurring goal orientations within one person. A person-centered approach facilitates the study of multiple goal orientations that coexist within a person. Latent profile analysis is a person-centered type of analysis, which identifies subgroups of individuals with similar characteristics on multiple predictors (Pastor et al., 2007). This data-driven clustering technique can be used by researchers who are interested in multiplicative effects instead of only additive, direct effects (Merz & Roesch, 2011).

The purpose of the current study is to explore goal orientation profiles of teachers in Vocational and Educational Training (VET) colleges and to advance our understanding of the relationship between goal orientation profiles and professional development activities. Teachers in Dutch VET colleges have been confronted with a major educational reform in the recent years: the implementation of Competence-Based Education (CBE). The central aims of CBE are teaching students in an authentic context similar to their future workplace and preparing students for life-long learning and independent craftsmanship (Biemans et al., 2009). To foster this innovation and strengthen the link with practice, the teaching staff of VET colleges is composed of teachers from different subjects

(vocational or general subjects such as languages and mathematics) that work together in multidisciplinary teams to successfully organize vocational education programs (Oude Groote Beverborg, 2015). Ongoing involvement in professional development activities, such as acquiring information, asking colleagues for feedback, or experimenting with new teaching practices contributes to the successful implementation of CBE and other educational innovations (Stoll, Bolam, McMahon, Wallace, & Thomas, 2006).

This study provides a contribution to the literature on goal orientations by exploring goal orientation profiles in the work domain, specifically for teachers. This is important because current studies in the work context mainly focus on linear relationships between single goal orientations, thereby neglecting the possibility of coexistence of different goal orientations. Until now, no studies have investigated goal orientation profiles of employees in the context of work and most studies focus on students' goal orientation (Jansen in de Wal et al., 2015; Kolić-Vehovec et al., 2008; Luo et al., 2011; Pastor et al., 2007; Pulkka & Niemivirta, 2013; Schwinger et al., 2012; Schwinger & Wild, 2012; Shim & Finch, 2014; Tuominen-Soini et al., 2008, 2011, 2012). Because the educational context differs from the work context in the explicit attention to learning and the assessment of performance, the outcomes of these studies cannot be translated one-on-one to a work context. Because the educational context differs from the work context in the explicit attention to learning and the assessment of performance, the outcomes of these studies cannot be translated one-on-one to the work context. Workplace learning of teachers is different compared to students learning at school; whereas the school context has a dominant and explicit focus on learning and development (Tynjälä, 2008) learning in the context of work is mostly informal, unintentional and unplanned (Eraut, 2004; Tynjälä, 2008). Therefore, our study aims to investigate goal orientation profiles that may explain to what extent teachers engage in professional development activities and how background characteristics (age, gender, previous work experience) are associated with goal orientation profiles. Furthermore, this study contributes to the literature on professional development of teachers by connecting goal orientation profiles to information acquisition and asking for feedback. Previous studies reported a positive relationship between a learning goal orientation and a performance-approach goal orientation on the

one hand and asking for feedback on the other hand (Janssen & Prins, 2007; Poortvliet, Janssen, Van Yperen, & Van de Vliert, 2007). However, these previous studies did not take into account the fact that different goal orientations coexist within individuals and that a specific combination of goal orientation can strengthen or buffer the effect of single goal orientations on professional development. Therefore, by addressing the role of goal orientation profiles in professional development, we extend the current knowledge on teachers' motivation for professional development (Butler, 2007). School leaders may use this knowledge to develop professional development policies that aim to encourage the participation of specific groups of teachers in professional development activities.

2. Theoretical framework

2.1. Goal Orientation in the Work Domain

In the majority of studies including learning goal orientation, positive associations with learning attitude and task performance were found (for a detailed meta-analysis on samples of adults in work and occupational settings see Payne et al. (2007)). Studies that are based on samples of teachers (Chughtai & Buckley, 2010; Runhaar et al., 2010) found positive associations between a learning goal orientation and feedback seeking behavior of teachers. When a learning goal orientation is adopted, environmental cues such as positive and negative feedback and experimenting with new ways of working are considered relevant to improve skills and not as a judgement of performance (VandeWalle, 2004). Teachers with a high learning goal orientation invest more in their professional development (Runhaar et al., 2010) and have higher levels of self-efficacy (Butler, 2007; Runhaar et al., 2010; Schiefele & Schaffner, 2015) and pro-active behavior (Zhang et al., 2016). Moreover, various studies have found that teachers with a learning goal orientation are more supportive towards their students, using learning goal-oriented instructional practices (Butler & Shibaz, 2008; Retelsdorf et al., 2010). Studies including performance approach goals reported ambivalent results as becomes evident from the meta-analysis of Payne et al. (2007). Believe in stable and fixed traits (entity theory) were positively related to the performance approach goal orientation, whereas self-esteem and

self-efficacy were negatively related to the performance approach goal orientation. Moreover, the outcomes learning, task performance, and job performance were unrelated to the performance-approach goal orientation. More recent studies in the teacher domain found that a performance-approach goal orientation was positively associated with work engagement (Han, Yin, & Wang, 2016; Kunsting et al., 2016; Parker, Martin, Colmar, & Liem, 2012; Skaalvik & Skaalvik, 2013) but that teachers with higher levels of performance approach goals also perceived more occupational strain (Nitsche et al., 2013) and demonstrate lower-levels of pro-active work behavior (Zhang et al., 2016). Performance avoidance goals were mostly found to be associated with more negative outcomes (Payne et al., 2007). Individuals with a high level of performance avoidance goals perceive their skill set as finite and regard environmental cues as threats rather than opportunities for development (VandeWalle, 2004). This is detrimental for learning since opportunities, like asking support from colleagues and searching for new information, are not fully used. This was supported by the meta-analysis of Payne et al. (2007). The performance-avoidance goal orientation was negatively associated with self-esteem, feedback seeking behavior, and task performance, and positively associated with anxiety. This is in line with Parker et al. (2012) who found that teachers with high levels of performance avoidance demonstrate self-handicapping behavior such as procrastination and unrealistic goal setting.

Research applying goal orientation profiles has until now been limited to the context of education and is exclusively based on samples of students. A literature search on studies of goal orientation profiles resulted in eleven studies all based on student samples. The number of goal orientation profiles found ranged between three and six. Two studies found three goal orientation profiles in samples of primary school students (Jansen in de Wal et al., 2015; Schwinger & Wild, 2012). Jansen in de Wal et al. (2015) distinguished a high multiple goal orientation profile (high scores on all goal orientations), a diffuse goal orientation profile (average scores on all goal orientations) and a performance oriented profile (with high scores on both performance goals). Schwinger and Wild (2012) also identified the multiple goals and diffuse profile but identified a high learning goal orientation profile instead of the approach oriented profile. A four-profile solution was found in six studies (Luo et al., 2011;

Schwinger, Steinmayr, & Spinath, 2016; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2011, 2012; Wang, Morin, Liu, & Chian, 2016), including a high performance, high-avoidance and a success-oriented profile (combining high performance goals and high learning goals) (Tuominen-Soini et al., 2011, 2012). Other combinations found in four profile solutions were diffuse, multiple goals, all high goals and disengaged (all low goals) (Wang et al., 2016); diffuse, approach oriented, moderate learning and success-oriented (Luo et al., 2011); and high-avoidance, success-oriented, approach oriented and high learning oriented (Tapola & Niemivirta, 2008). Pastor et al. (2007) identified five goal orientation profiles among college students in the United States and found a diffuse, approach-oriented, success-oriented, learning oriented and high performance approach profile. For the six profile solutions found, the four profile solution of the (Tuominen-Soini et al., 2011, 2012) was complemented with a disengaged goal orientation profile and a success-oriented goal orientation profile (Tuominen-Soini et al., 2008). Results from aforementioned studies based on student samples provide a feasible ground for the existence of goal orientation profiles among teachers. However, because the number and type of goal orientation profiles differ per sample no conclusion can be drawn regarding the goal orientation profiles that exist in general. Moreover, all previous studies were performed on samples of students or children, with a wide variety in age (8 to 19 years old) and educational level (primary school to college students). Because goal orientations change with age (de Lange et al., 2010) and the educational context has a strong emphasis on learning while the work context has a predominant focus on performance, goal orientation profiles need to be explored among working professionals to fill this gap in the literature. Because our study is the first to estimate goal orientation profiles in the work domain it is largely explorative and we cannot formulate hypotheses about the exact number and types of profiles that we expect. However, based on studies of students' goal orientation profiles, three up to six goal orientation profiles can be expected. Because of the variety in types of goal orientation profiles that were found in previous studies, we do not have specific expectations for the types of goal orientation profiles in the work domain.

2.2. Goal Orientation and Background Characteristics

In this study multiple background characteristics were included to explain goal orientation profiles. First, based on the socioemotional selectivity theory (Carstensen, 2006) it can be argued that older workers perceive their time as more limited, leading to less future-focused goals. Therefore, we expect that the level of learning goals will be lower for older teachers compared to younger teachers and that older workers will have a lower motivation to participate in opportunities for learning. Hence, we decided to include age as a background characteristic in our study to explain why individuals are assigned to a specific goal orientation profile.

Second, teachers in vocational education and training have various backgrounds (teaching or work practice) and work together in multidisciplinary teams to provide students with competence-based education (Biemans et al., 2009). Many teachers previously worked in a practical-oriented occupation (i.e. hair dresser or nurse) and were retrained to be a teacher and to strengthen the link between learning and the future workplace of students. This lateral entry in the educational sector can be an explanatory factor when assigning teachers to goal orientation profiles, because teachers that start teaching later in their career might be more insecure and therefore more cautious in taking on tasks that could show their incompetence (Kunter, Frenzel, Nagy, Baumert, & Pekrun, 2011). This might result in more frequent assignment of these teachers to profiles with high levels of performance avoidance. Another possibility is that to hide their insecurity about their teaching quality, teachers with a previous career in practice are more eager to show their results to others, which will result in an assignment to high performance approach-oriented profiles. Therefore this variable, a previous career outside education, was included as explanatory background characteristic.

The last background characteristic included in this study was gender. We do not expect differences between goal orientation profiles and gender, because previous studies which related single goal orientations to gender did not find significant differences between men and women regarding their goal orientations (Button et al., 1996; Hirst, Van Knippenberg, & Zhou, 2009; Van Yperen, 2006).

2.3. Professional Development and Goal Orientation Profiles

Teachers professional learning activities may take place in formal and informal contexts (Richter et al., 2011). Learning activities in formal contexts refer to the participation in planned and structured learning opportunities such as training and education. Learning activities in informal settings are initiated by teachers themselves, are often unplanned and embedded within the school or near-school environment (Richter et al., 2011; Tynjälä, 2008). This study will specifically focus on two types of teachers' learning activities namely information acquisition and asking for feedback. Teachers can acquire information in both formal settings (e.g. by participation in courses), and informal settings (e.g. by reading about their subject in course manuals, books or on the internet) (Van Offenbeek, 2001). Asking for feedback refers to teachers' initiative to acquire feedback, help or advice from direct colleagues, outsiders or family and friends (Wong, 2004). Both activities refer to self-initiated learning behavior that contribute to improved knowledge and skills (Lohman, 2006). We expect that these self-initiated professional learning activities will be related to teachers' goal orientation profile.

Teachers with a high learning goal orientation are likely to be more active in information acquisition as this increases the possibility to improve their knowledge, skills, and abilities (Janssen & Prins, 2007; Tuckey et al., 2002; Weiss et al., 2008). In contrast, teachers with performance approach goals may acquire information only when they expect this to have a direct impact on their performance or the meeting of expectations (Weiss et al., 2008), whereas teachers who score high on performance avoidance will only acquire information to prevent looking incompetent to others. What we do not know, however, is how information acquisition is affected by a combination of these goal orientations.

Teachers with a strong learning goal orientation perceive feedback as an opportunity to learn and improve (Janssen & Prins, 2007) and see negative feedback as diagnostic information instead of performance evaluation (Morrison & Bies, 1991; VandeWalle, 2004). Teachers with a strong performance approach goal orientation view performance feedback as a possibility to justify their competence; on the other hand, positive feedback might give them an ego boost

(Tuckey et al., 2002) and a possible negative evaluation of their performance will be avoided to prevent loss of image (Kluger & Nir, 2010; Morrison & Bies, 1991). Therefore, we expect that teachers with a profile including a high learning goal orientation participate more frequently in feedback seeking behavior than teachers with a profile with a high score on performance-approach or avoidance goal orientation.

Although we did not formulate specific hypotheses regarding different goal orientation profiles and their relations to professional development activities, we do have some more generic expectations. First, we expect to find differences in participation in professional development for the different goal orientation profiles. Second, we predict that participation in professional development activities will be higher for teachers assigned to a profile with a moderate-high learning goal orientation score, and lower for teachers with a moderate-high performance avoidance score within a profile. Third, teachers with a combination of moderate-high learning goals and moderate/high performance approach goals are expected to participate more in professional development activities compared to teachers with only moderate/high performance approach goals. This is because teachers with dominant performance approach goals might be more focused on meeting the norms for professional development (i.e. number of hours spent or number of training sessions taken) to avoid negative evaluations and outperform their colleagues. Fourth, when besides a high performance approach goal orientation, a moderate to high learning goal orientation is present, teachers might have more concern for the needs of the others within the school. This is because the performance approach goal orientation makes teachers aware of the others and their expectations and judgements. Therefore, when teachers have a combined profile including moderate to high levels of performance approach goals and moderate to high level of learning goals, the intrinsic motivation to learn and willingness to seek for challenging opportunities can counter the possible negative impact of performance approach goals and stimulate teachers to use knowledge of others. The active acquisition of information and asking for feedback might, therefore, be stimulated when teachers have a combined performance-approach and learning goal orientation profile.

3. Method

3.1. Design & Procedure

In 2014, we distributed an online questionnaire among 1650 teachers in vocational education and training (VET) in the Netherlands as part of a large national study on team learning in teacher teams in VET. Using telephone and invitation e-mails team leaders and educational managers were invited to participate in this study. All participating teachers received an invitation for the online questionnaire via e-mail. Teams that participated received a report including an overview of their average team scores as a reward for their participation.

3.2. Participants

A total number of 1147 teachers of 104 teacher teams from 23 vocational education and training institutions participated (response rate = 69.51%). From the 503 non-respondents, 30 teachers started the questionnaire but did not answer any question, and 473 respondents did not click on the link in the respondents' e-mail at all. From all respondents, 984 were full respondents to every scale (full response rate = 59.63%) and 163 were partial respondents who stopped after completion of the questions about demographics (age, gender, years of experience and work experience) (partial response rate = 9.88%). For these 163 respondents, all items measuring goal orientation, information acquisition and asking for feedback were missing. After deleting cases with missing values on the main variables in this study, 984 teachers were retained. The average age of the teachers in our sample was 47.42 (range between 21 – 68 years). In our sample 507 (51.5%) women and 466 men participated (comparable to 48% females in the overall population; Central Bureau for Statistics 2016). At least 80% of the teachers had a higher vocational education or university background (comparable to 76.7% in the overall population; Central Bureau for Statistics 2016).

3.3. Measures

3.3.1. Goal Orientation

All three scales from the work domain goal orientation instrument developed by VandeWalle (1997) were used. Learning goal orientation was measured with five items (e.g., "I am willing to select a challenging work assignment that I can learn a lot from"), Cronbach's α = .82. Performance approach goal orientation was measured with four items (e.g., "I enjoy it when others at work are aware of how well I am doing"), Cronbach's α = .81. The performance avoidance goal orientation was also measured with four items (e.g., "I'm concerned about taking on a task at work if my performance would reveal that I had low ability."), Cronbach's α = .81. A 5-point Likert scale was used (1 = *totally disagree* and 5 = *totally agree*). The confirmatory factor analysis suggested that the three factor structure fit the data appropriately, $\chi^2(62) = 300.996$, $p < .001$, RMSEA = .059, TLI = .937, CFI = .950, SRMR = .054 and significantly better in comparison to a one-factor model $\chi^2(65) = 2348.047$ $p < .001$, RMSEA = .200, CFI = .521, TLI = .425, SRMR = .172, and a two-factor model (learning goal orientation versus performance goals); $\chi^2(64) = 642.753$ $p < .001$, RMSEA = .166, TLI = .606, CFI = .677 , SRMR = .181.

3.3.2. Information acquisition

Information acquisition was measured with three items from the team learning scale developed by Van Offenbeek (2001) and two items that measured participation in training (see Appendix A). An example item is: "I participate in meetings outside the school (e.g., courses, conferences, or workshops)". A 5-point Likert scale (1 = *never* and 5 = *always*) was used. Cronbach's alpha for this scale was .63. The confirmatory factor analysis suggested acceptable data fit, $\chi^2(5) = 45.747$, $p < .001$, RMSEA = .091, TLI = .866, CFI = .933, SRMR = .034.

3.3.3. Feedback asking behavior

To measure feedback asking behavior, the four item distal learning scale of Wong (2004) was used. The referent was shifted from "we" to "I" to be able to measure this construct for individual analysis (see Appendix A). A 5-point Likert scale was used (1 = *never* and 5 = *always).* An example item is: "I obtain

help and advice from people external to the team". Cronbach's alpha for this scale was .78. The confirmatory factor analysis suggested good data fit, $\chi^2(2) = 20.149$, $p < .001$, RMSEA = .096 , TLI = .95, CFI = .99, SRMR = .022

3.4. Statistical analyses

The statistical analyses in this study were carried out in multiple steps. First, preliminary analyses were conducted to evaluate if it was necessary to perform multilevel analyses because teachers were nested in teams. Therefore, we calculated the ICC(1) and ICC(2) for all variables. The ICC(1)-scores, indicating the proportion of variance between the teams, ranged between -.007 (learning goal orientation) and .022 (asking for feedback and information acquisition). Furthermore, the ICC(2)-scores, corresponding with the reliability of the group mean, varied between -.106 (learning goal orientation) and .234 (information acquisition). These results indicate that controlling for the nested data-structure was not needed and individual level variables could be used in the analyses (LeBreton & Senter, 2008). Although negative intra class correlations are quite rare, these may occur when the within-group variance is smaller compared to the between-group variance (Bliese, 2000; Woehr, Loignon, Schmidt, Loughry, & Ohland, 2015). Second, a latent profile analysis was performed to identify goal orientation profiles of teachers in the sample. Based on the number of profiles found in previous research, $k = 1$ to $k = 10$ profiles were evaluated using Mplus 7.3 (Muthén & Muthén, 1998 - 2015) in order to identify distinct profiles. Multiple criteria were used to evaluate the model fit. The statistical analyses in this study were carried out in multiple steps. First, a latent profile analysis was performed to identify goal orientation profiles of teachers in the sample. Based on the number of profiles found in previous research, k = 1 to k = 10 profiles were evaluated using Mplus 7.3 (Muthén & Muthén, 1998 - 2015) in order to identify distinct profiles. In line with Nylund et al. (2007) multiple criteria were used to evaluate the model fit. First, the Bootstrap Likelihood Ratio Test (BLRT) (Nylund et al., 2007) was used to test whether a k-profile model had a significantly better absolute fit compared to a k-1 model. The null hypothesis for the BLRT is that no increase in model fit is obtained by adding an extra profile. When BLRT is not significant the number of profiles should not be increased any further. Second, the Bayesian Information Criterion (BIC) was used to

compare the relative fit of multiple models to the data, while penalizing each model for its complexity (i.e. the number of parameters) and the sample size. That is, a lower BIC indicates a better fit/complexity trade-off. In a last step, the entropy and smallest profile size were used to verify the model fit. The value of the entropy shows the ability of the profile solution to assign individuals to the correct profile. A value above .70 is used as a rule-of-thumb for appropriate model fit. To have an acceptable minimum number of individuals in each profile we required the smallest profile to include at least 5% of the individuals of the sample (Nylund et al., 2007). A good statistical and theoretical fit of the final profile solution was of overriding importance in selecting the number or profiles.

Having identified the appropriate number of goal orientation profiles, using the 3-Step approach in Mplus (Asparouhov & Muthén, 2014) mean score differences tests were used to compare the latent profiles on teacher characteristics (gender, age, work experience, work experience outside education) and the professional development activities information acquisition and asking feedback. This approach is comparable to the often applied multinomial logistic regression analysis approach to compare mean scores. In the 3-step approach first, the latent profile model was estimated. Second, the most likely latent profile probability was computed for each teacher in the sample. Based on these probabilities a classification of uncertainty was computed taking into account the possibility of misclassification. In the third step, the distal outcomes (information acquisition and asking for feedback) were included and compared based on the mean scores. In this step, the most likely latent class membership (step 1) was used as an indicator while the uncertainty rate (step 2) was used as a covariate to control for classification errors (Asparouhov & Muthén, 2014).

4. Results

4.1. Descriptive Statistics

Table 3.1 presents the means, standard deviations, and correlations between the three goal orientations, professional development activities and teacher

Table 3.1 - Univariate Descriptive Statistics and Correlations

Measure	1	2	3	4	5	6	7	8	9	10
1. Learning GO	-									
2. P-Approach GO	.21**	-								
3. P-Avoidance GO	-.36**	.19**	-							
4. Asking Feedback	.28**	.14**	-.14**	-						
5. Information Acquisition	.38**	.09**	.09**	.48**	-					
6. Age	-.15**	-.14**	.06	-.13**	-.03	-				
7. Gender (1 = Male)	.05	.07**	.04	.03	.06	.13**	-			
8. Work Experience Outside Education[2]	.20**	.06	-.11**	.09**	09**	.09**	.10**	-		
9. Working Hours	.05	.05	.02	.03	.06	.13**	.29**	-.09*	-	
10. Years in Education	-.19**	-.11**	.11**	-.11**	-.01	.68**	.09**	-.30**	.14**	-
M	0	0	0	2.52	3.31	47.42	48%	73%	36.4	14.76
SD	1	1	1	.64	.63	11.15			.18	10.73

Note.

N = 882.

[2] Did you had a previous career outside education? (1 = Yes, 0 = No).

Learning GO = Learning goal orientation;

P-approach GO = Performance-approach goal orientation;

P-Avoidance GO = Performance-avoidance goal orientation. * $p < .05$, ** $p < .01$.

characteristics. Based on the correlations presented in Table 3.1 one can derive that the three goal orientations correlate weakly to moderately with each other. Information acquisition was positively correlated with a learning goal orientation, $r = .38$, $p < .001$. In line with our expectations, learning goal orientation ($r = .28$, $p < .001$) and performance approach goal orientation ($r = .14$, $p < .001$) were positively related to asking feedback and performance avoidance was negatively associated with asking feedback ($r = -.14$, $p < .001$). Work experience outside education showed a positive correlation with the learning goal orientation ($r = .20$, $p < .001$) and a negative correlation with the performance avoidance goal orientation ($r = -.11$, $p < .001$)

4.2. Identification of Teacher's Goal Orientation Profiles

Prior to the latent profile analysis, a confirmatory factor analysis was performed to verify whether the trichothomous goal orientation structure was well identified. The factor scores were saved and used as indicators for the latent profiles. A latent profile analysis was conducted to identify the number of goal orientation profiles of the respondents. Table 3.2 presents the profile solutions for k = 1 to k = 10 latent profiles. As can be seen in this table, the BIC declined when adding extra profiles and the BLRT stayed non-significant indicating that a higher number of profiles could be preferred above a lower number of profiles. The entropy was not high (> .80) but from the 5-profile and 6-profile model onwards, it exceeded the .70 minimum value. Based on the smallest number of teachers assigned to the profiles the 5-profiles model was used for interpretation and further analyses. To interpret and label the different goal orientation profiles the guidelines of Luo et al. (2011), using the standardized mean score were adopted. A standardized mean score below -1 indicated a low score on a specific goal orientation, a standardized mean score below 1 was interpreted

Table 3.2 - escription of Model Fit Statistics for k = 1 to k = 10 Goal Orientation Profiles

				Smallest profile size	
k	BLRT	BIC	Entropy	N	%
1	-	8416	1.00	984	100
2	< .001	8307	.506	426	43.2
3	< .001	8235	.562	168	17.1
4	< .001	8192	.655	78	7.9
5	< .001	8159	.709	92	11.9
6	< .001	8149	.727	22	2.2
7	< .001	8086	.777	35	3.5
8	< .001	8090	.786	6	0.6
9	.1538	8106	.793	5	0.5
10	.1053	8120	.804	7	0.7

Note.

BLRT = Bootstrap Likelihood Ratio Test. *BIC* = Bayesian Information Criterion

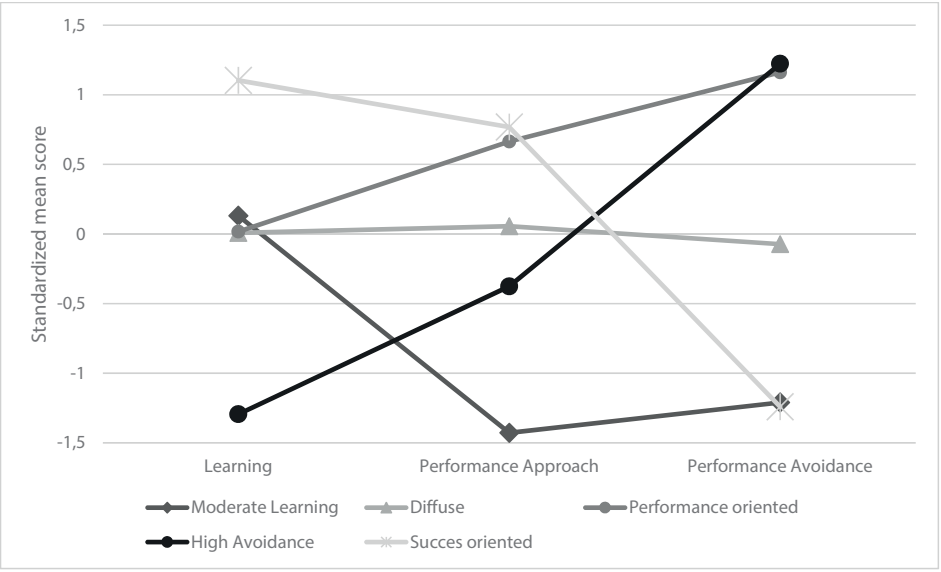

Figure 3.1 - Standardized Means for the Goal Orientations in the Five Goal Orientation Profiles.

as a high score on specific goal orientation, and a score between -1 and 1 was labelled as 'moderate'.

Figure 3.1 illustrates the standardized mean scores on the goal orientation profiles. Half of the teachers (50.1%) were assigned to the largest profile (the diffuse profile) and demonstrated scores close to the means of all scales. These teachers did not show a preference for one of the three goal orientations. The other half of the teachers were almost equally divided among the four other profiles. Moderate-learning (12.3%) teachers scored average on learning goal orientation but low on performance approach and performance avoidance goals. High-avoidance teachers (10.9%) scored high on the performance avoidance orientation and low on the learning goal orientation. Performance-oriented teachers (15.9%) scored high on performance avoidance and relatively high on performance approach orientation and around average for the learning goal orientation. The last category includes success-oriented teachers (10.7%) with a high level of learning goal orientation and a moderate high performance approach goal orientation.

4.3. Goal Orientation Profiles and Background Characteristics

To gain more insight into the individual characteristics that were related to each profile, we calculated a mean score on demographic (gender, age), and career characteristics (work experience outside education, work experience in education and number of working hours per week; see Table 3.3). Although there was a roughly equal number of men and women in the overall sample, respondents in the success-oriented and performance-oriented profile were significantly more often male whereas respondents with a high avoidance profile were more often female. The average age differences between the profiles were small, although the high avoidance profile was the oldest. Work-related background characteristics such as work experience outside education, years of work experience in education, and number of working hours showed that success-oriented and performance-oriented teachers had more often work experience outside education compared to teachers with a high-avoidance profile. Teachers with a high avoidance profile had the highest work experience within education and had least frequently worked outside education. The number of working hours per week did not differ significantly across the goal orientation profiles.

Table 3.3 - Mean Score Comparison on Background Characteristics

	Moderate-Learning	Diffuse	Performance-Oriented	High-Avoidance	Success-Oriented
	M	*M*	*M*	*M*	*M*
Gender (1 = Male)	.51	.43[1]	.65[1,2]	.37[2,3]	.57[3]
Work Experience Outside Education[a] (1 = Yes)	.76[4,5]	.73[6,7]	.80[8]	.42[4,6,7,9]	.88[5,7,8,9]
Age (years)	48.6[10]	46.4[11]	46.3[12]	53.3[10,11,12,13]	46.6[13]
Years in Education	15.4[14,15]	13.3[16,17]	13.6[18]	23.8[14,16,18,19]	13.2[15,17,19]
Working hours	35.6	36.0[20]	36.4	37.8[20]	37.8

Note.

Equal subscripts indicate significant mean differences between the profiles.

[a] Did you have a previous career outside education?

Table 3.4 - Mean Scores on Asking Feedback and Information Acquisition for All Goal Orientation Profiles

	Moderate Learning	Diffuse	Performance oriented	High Avoidance	Success-oriented
	M	*M*	*M*	*M*	*M*
Information Acquisition	$3.43^{1,2}$	$3.26^{3,4}$	$3.36^{5,6}$	$2.89^{1,3,6,7}$	$3.74^{2,4,5,7}$
Asking Feedback	$2.48^{1,2}$	$2.51^{3,4}$	$2.53^{5,6}$	$2.16^{1,3,6,7}$	$2.96^{+2,4,5,7}$

Note.

Equal symbols indicate significant mean differences between the profiles.

4.4. Goal Orientation Profiles and Professional Development

To examine mean score differences between the profiles on information acquisition and asking for feedback, the 3-step procedure for distal outcomes was used (Asparouhov & Muthén, 2014). The results in Table 3.4 show three patterns of comparison that are similar for both information acquisition and asking feedback. First, the success-oriented profile (high learning combined with high performance approach goals) exceeded all other profiles in terms of the mean scores on information acquisition and asking for feedback. When the other profiles were compared to the success-oriented profile, all other profiles score significantly lower. Second, in contrast, the high avoidance profile has the lowest scores on information acquisition and asking for feedback compared to the four other profiles. And third, the moderate-learning, diffuse and performance-oriented profile do not show significant mean differences between the profiles, on information acquisition and asking feedback.

5. Discussion

The current study investigated the existence of goal orientation profiles among teachers. Five different goal orientation profiles were found within a sample of 984 teachers from vocational education and training institutions. Most teachers in our study were assigned to the diffuse profile, with a moderate representation

of all goal orientations. This finding is similar to previous studies on students' samples that all identified a diffuse goal orientation profile. The four other profiles that we found were also in line with previous studies. The performance oriented profile (scoring high on both performance approach and performance avoidance goals) was reported by Luo et al. (2011) and by Tuominen-Soini et al. (2008, 2001, 2012).The success-oriented profile (scoring high on both learning and performance approach goals) was identified in the study of Luo et al. (2011) and Pastor et al. (2007). The moderate learning profile was also found by Luo et al. (2011) and the high avoidance profile was identified in the studies of Tuominen-Soini et al. (2008, 2011, 2012). So although goal orientations change with age (de Lange et al., 2010) and the educational context has a strong emphasis on learning whereas the work context has a predominant focus on performance, goal orientation profiles of working professionals appear to be quite similar to those of students. By demonstrating the existence of goal orientation profiles for teachers, our study contributes to the research on teachers' goal orientations (Butler, 2007; Skaalvik & Skaalvik, 2013) which until now has primarily focused on single goal orientations instead of combinations of goal orientations (Pastor et al., 2007). Studying goal orientation profiles improves the insight into the buffer and/or boosting function of having multiple goal orientations at the same time (Barron & Harackiewicz, 2001).

Relating the goal orientation profiles to professional development activities showed that a combination of high learning goals, high performance approach goals, and low performance avoidance goals (success-oriented profile) resulted in the highest mean score on both professional development activities. This illustrates that not only a high learning goal orientation but the specific combination with high performance approach goals is associated with more participation in professional development activities. Teachers with a success-oriented profile are focused on the understanding of tasks and like to enter challenging environments where they can learn and simultaneously enjoy opportunities to show successful performances to others. This is in line with previous research indicating that individuals with a high learning or performance goal orientation have a higher ability to cope with complex situations because they work with persistence towards successful task completion (Elliot & McGregor, 2001; Kaplan, Middleton, Urdan, & Midgley, 2002).

Unfortunately, we cannot draw conclusions about whether a learning goal orientation can function as a buffer for a high performance avoidance orientation, and thereby result in less detrimental outcomes in terms of participation in learning activities, as suggested by Barron and Harackiewicz (2001). Although we identified three profiles with a moderate learning goal orientation (performance oriented, moderate learning, and performance avoidance) in combination with various levels of performance approach and performance avoidance orientation, the levels of learning goal orientation in these profiles are close to each other, leading to difficulties in identifying the impact of performance-approach and performance-avoidance goals in coexistence with learning goals.

Although the success-oriented profile was the most favorable profile in terms of professional development activities, only a minority of teachers were assigned to this profile. The majority of teachers turned out to have a diffuse goal orientation profile, scoring averagely on the three goal orientations. For teachers in this diffuse profile, the positive impact of the combination of moderate levels of performance approach and learning goals might be limited because the average levels of performance avoidance goals will have a restraining impact on participation in learning activities (Jansen in de Wal et al., 2015). This lowering impact of performance avoidance goals can be explained by the fear to fail when colleagues are nearby and in the position to judge a teacher's performance. When there is a chance that other teachers can express negative judgements, for example via feedback, those teachers might evade colleagues to prevent themselves from negative judgements on performance.

Our results show that teachers with a diffuse profile participate less in professional development activities compared to teachers in profiles with higher levels of learning and performance approach goals. Although these teachers do feel the need to keep up with the new developments and literature in their field and are willing to ask feedback they might be distant to participation when there is a chance of task failure or negative judgement of colleagues. Task withdrawal in the form of low participation in information acquisition activities and not asking feedback is an approach to prevent negative judgements, instead of learning from negative feedback (Button et al., 1996).

Post-hoc comparisons on background characteristics showed interesting

differences among the goal orientation profiles. These comparisons pointed out that on average, older teachers were more often assigned to the performance avoidance profile. This is in line with the socioemotional selectivity theory (Carstensen, 2006). This theory poses that older workers put less energy in the development and enrichment of knowledge because they focus more on short-term goals (social interaction, good work atmosphere, and current work performance). The preference of older workers to focus on not performing worse than before and the shift over time from a learning goal orientation towards performance avoidance or performance approach oriented goal orientations have been confirmed in previous research (de Lange et al., 2010). When workers age, the self-perception of one's performance might become negative due to psychological constraints (being less able to process information or to deal with high work pressure) and physiological constraints (less energy, limited mobility). Moreover, the fear of performing worse than before in new achievement situations is strengthened (Elliot & Dweck, 2005).

Other relevant background characteristics that resulted in significant mean differences between the profiles are work experience (years) and work experience outside education. Specifically, we found that teachers with experience outside education were more often assigned to the performance-oriented or success-oriented profile. These two profiles have a high performance approach goal in common, indicating that teachers with previous work experience outside education have a focus on showing their competence in task performance, and are eager to seek for feedback from colleagues. This finding may be explained by the individual orientation of the teaching profession. In general, teachers are strongly focused on individual task performance and are not used to collaboration within a team (Helstad & Lund, 2012; Vangrieken et al., 2016). However, teachers with much work experience outside education might be more used to collaboration and working towards common team goals and might therefore also be more used to receiving and asking feedback.

5.1. Limitations and Future Research

A first limitation of this study is its cross-sectional nature, implying that we cannot make claims regarding causality and that we do not know how stable goal orientation profiles are over time and across different situations. Within

the literature, a long standing debate exists about whether goals orientation should be seen as states, traits or quasi-traits. A majority of studies treat goal orientation as a quasi-trait that might slightly change depending on the situation (DeShon & Gillespie, 2005). Future studies with a longitudinal design would provide the opportunity to verify the stability of goal orientation profiles and to identify predictors of changes across profiles. For instance, it could be examined to what extent coaching leadership may stimulate teachers to move from a more diffuse or performance-avoidance profile towards a learning dominated goal orientation profile.

This study was the first to investigate goal orientation profiles of teachers. Although the number of respondents within this study provided enough power to estimate latent profiles (Gudicha, Tekle, & Vermunt, 2016) our results cannot be generalized to the complete population of teachers, which might have different background characteristics compared to the VET-college teachers used in this sample. Replication of our study in other educational sectors (primary education, secondary education, higher education) is needed to validate the number and content of goal orientation profiles. Moreover, future research should point out to what extent goal orientation profiles predict teacher cognitions and behaviors such as self-efficacy (Butler, 2007; Cho & Shim, 2013; Deemer, 2004; Hoffmann, Huff, Patterson, & Nietfeld, 2009; Inbar-Furst & Gumpel, 2015; Kilday et al., 2016; Kucsera, Roberts, Walls, Walker, & Svinicki, 2011; Künsting, Neuber, & Lipowsky, 2016; Runhaar et al., 2010; Schiefele & Schaffner, 2015; Throndsen & Turmo, 2013); proactive behavior (Zhang et al., 2016); instructional practices (Nitsche et al., 2013; Retelsdorf et al., 2010), and engagement (Han et al., 2016; Kunsting et al., 2016; Parker et al., 2012; Skaalvik & Skaalvik, 2013).

In this study, we included information acquisition and asking for feedback only as indicators of teacher professional development. Future research on teachers' goal orientation profiles and professional development might therefore include other professional development activities such as collaborative learning (Levine & Marcus, 2010), team learning (Ohlsson, 2013; Vangrieken et al., 2016) or critically reflective work behavior (Van Woerkom & Croon, 2008) .

More research focusing on the individual needs of teachers based on their career phase, personal characteristics and goal orientation profiles could contribute to the development of tailor-made professional development practices.

Also, future research including context variables such as a school climate, leadership styles of managers and job demands such as work pressure could provide more concrete directions for interventions that may stimulate teachers to change towards learning-oriented or success-oriented profiles. A last limitation of our study is that we used Vandewalle's (1997) instrument which only includes learning, performance approach and performance avoidance goal orientations. We decided to use Vandewalle's instrument because it is validated in a wide range of sectors (education, sports, health care, finance), thereby strengthening the generalizability of our results. Nevertheless, future research might also include mastery avoidance goals, which refer to the prevention of the loss of knowledge (Baranik et al., 2010). Teachers who score high on this construct strive for maintaining their levels of performance, avoiding to perform worse compared to previous performance (Van Yperen & Orehek, 2013). Including mastery avoidance goals might give a more refined perspective on the high avoidance goal orientation profile. Including work avoidance goals (referring to a preference for tasks that do not involve significant effort) might also contribute to more detailed knowledge about the high-avoidance goal orientation profile.

5.2. Practical Implications

The results of the current study suggest that schools with a majority of older women, who are more likely to adopt a performance-avoidance goal orientation profile, could experiment with approaches to enhance their learning goal orientation and thereby stimulate their participation in professional development activities. Teachers with an avoidance-oriented profile are known to be more anxious to show failure to their environment. This fear prevents these teachers to participate in professional learning tasks. Possibly, a safe environment, supporting different perspectives and opinions will support them in taking on new and challenging tasks even if there is a chance of failing (Edmondson 1999). A team leader demonstrating transformational leadership is likely to contribute to this safe environment by stimulating teachers to take risks and by emphasizing the importance of learning instead of only performance (Runhaar et al. 2010).

6. Conclusion

This study was the first to study the coexistence of different goal orientations in the context of work. Five goal orientation profiles were identified that are distinctive in content, with half of the teachers being assigned to a diffuse profile with an equal orientation on learning goals, performance approach goals, and performance avoidance goals. Teachers with a success-oriented profile (a combination of high values of learning and performance approach goals and low scores on performance avoidance goals) demonstrated the highest level of participation in professional development activities. Our results showed that high learning goal orientation profiles are associated with the most participation in learning activities and that high avoidance profiles are associated with the least participation in professional development activities. The individual characteristics of age, work experience and gender showed to be distinctive factors between the goal orientation profiles. Specifically, the high avoidance profile (low learning and performance approach goals and high performance avoidance goals) included more females and more older workers, and the success-oriented profile contains more teachers with previous work experience outside education.

CHAPTER
3

CHAPTER 4

Stability and change in teachers' goal orientation profiles over time: Managerial coaching behavior as a predictor of profile change[3]

ABSTRACT

Goal orientation is an important predictor of motivation at work. This study introduces goal orientation profiles in the work domain, evaluates their stability over time and assesses the impact of managerial coaching behavior on change in employees' goal orientation profiles. We hypothesize that coaching managers inspire, facilitate, and guide employees to change towards profiles with relatively high levels of learning goal orientation and performance approach goals, and relatively low levels of performance avoidance goals. We conducted a two-wave study with a one-year time interval among teachers (N = 521) working in Vocational Education and Training institutions in the Netherlands. Latent transition analysis and multinomial regression analyses were applied. Four distinct profiles were identified: success-oriented, diffuse, low-performance, and high-avoidance. Although the majority of the teachers remained in the same goal orientation profile over time (91.2%) a small percentage of the teachers shifted towards the success-oriented goal orientation profile. Facilitative managerial coaching was positively associated with belonging to the success-oriented goal orientation profile while guidance was negatively associated with

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belonging to the success-oriented goal orientation profile. Moreover, facilitative managerial coaching supported change to the success-oriented profile while guidance and inspirational managerial coaching did not support this transition.

Keywords: *goal orientation; latent transition model; managerial coaching behavior; teachers*

1. Introduction

According to achievement goal theory (Ames & Ames, 1984; Dweck, 1986, 1990; Nicholls, 1984) people can pursue different goals in achievement situations, such as learning goals, performance-approach goals and performance-avoidance goals (VandeWalle, 1997). Most studies on goal orientations have applied a single goal orientation approach, relating all goal orientations separately to outcome variables, and neglecting the fact that combinations of goal orientations can coexist within one individual (Pastor et al., 2007). However, according to the multiple goal perspective Barron and Harackiewicz (2001) all goal orientations are present within an individual, although the salience of these different goal orientations can vary depending on personality and situational cues. Different goal orientations can either strengthen each other or function as a buffer for the negative effects of dominant negative goal orientations (e.g., a high performance-avoidance goal orientation balanced by a high learning goal orientation) (Barron & Harackiewicz, 2001). For this reason, we need to study goal orientation profiles of subgroups of individuals with specific combinations of goal orientations instead of single goal orientations.

Although there has been an upswing of studies applying goal orientation profiles, the majority of these studies are based on student samples (Luo et al., 2011; Pintrich, 2000; Tuominen-Soini et al., 2008). The only study that does investigate goal orientation profiles in a sample of employees (Van Yperen & Orehek, 2013) applies a clustering method which is not based on clear fit indices to decide on the best fitting number of profiles (Nylund et al., 2007) and therefore difficult to replicate (Pastor et al., 2007). Results from goal orientation profile studies on student samples cannot easily be transferred to the work context because of two reasons. First, whereas the dominant focus in education is on learning and development, performance is more valued in the work context (Tynjälä, 2008). Second, goal orientations are known to change with age (de Lange et al., 2010). The socioemotional selectivity theory (Carstensen, 2006) posits that, compared to younger workers, older workers focus less on future-oriented goals such as learning and development because they perceive time as more limited. Therefore, working adults are less likely to have a strong focus on learning goals compared to students.

Another omission in the literature on goal orientations is that to date only few studies have addressed to what extent goal orientations of employees may change over time and across situations (Kooij & Zacher, 2016; Parker et al., 2012; Potosky, 2010; Praetorius et al., 2014; Tonjes & Dickhauser, 2009). Goal orientations are generally viewed as relatively stable traits that can be compared with personality characteristics such as the Big Five (DeShon & Gillespie, 2005; Payne et al., 2007). However, goal orientations include both a stable and variable component (Praetorius et al., 2014) and are hypothesized to be susceptible for situational influences (Button et al., 1996). Based on trait-activation theory (Tett & Burnett, 2003) it can be expected that the variable fraction of specific goal orientations may be activated when workers are presented with trait-relevant situational cues in their work environment.

We expect that leaders may present such a trait relevant cue that is able to activate or deactivate specific goal orientations of employees. Previous studies showed that transformational leadership is associated with a learning goal orientation (Hamstra et al., 2014; Runhaar et al., 2010; Sosik et al., 2004; Yee et al., 2013) and that transactional leadership is associated with performance goal orientations (Hamstra et al., 2014; Yee et al., 2013). However, both transformational and transactional leadership refer to behaviors that are targeted at a collective of employees instead of at individual employees. In contrast, managerial coaching behavior refers to one-on-one interactions between a leader and an individual employee aimed at stimulating the growth of individual employees (Anderson, 2013; Ellinger & Bostrom, 1999) and may therefore be more suitable for addressing goal orientations. By providing constructive feedback and framing tasks as opportunity for development instead of opportunity for failure, coaching managers may activate learning and performance approach goals and deactivate performance avoidance goals (DeShon & Gillespie, 2005; Janssen & Prins, 2007; Tuckey et al., 2002). Managerial coaching behavior encompasses more than only providing feedback from the manager to the employee. Feedback in itself provides information on task performance only (Kluger & DeNisi, 1996) and is not always effective because individuals respond differently to different types of feedback (Kluger & DeNisi, 1996; Whitaker & Levy, 2012). For feedback to be effective a combination of positive goal setting towards future goals (Heslin, Carson, & Vandewalle, 2008), perceived utility and feedback quality (Whitaker & Levy, 2012) and guided reflection on future

steps (Anseel, Beatty, Shen, Lievens, & Sackett, 2013) is nescessary. Managerial coaching behavior from the leader incorporates all these types of behavior by helping to analyze performance and addressing both what to improve and how to improve it. Therefore, we expect that managerial coaching can stimulate employees to adopt a goal orientation profile that combines a high learning goal orientation, a high performance-approach goal orientation and a low performance-avoidance goal orientation.

1.1. Study aims and intended contributions

The aim of our study is to improve understanding of how combinations of goal orientations of working adults change over time as a result of managerial coaching behavior. This extends the current work on goal orientations in the work domain that only provide a theoretical discussion of the stability of single goal orientations (Fryer & Elliot, 2007), address the change of single goal orientations (Praetorius et al., 2014), include goal orientation in a longitudinal design without a focus on change in goal orientations over time and only focusing on goal orientation as a predictor, mediator or outcome (Kooij & Zacher, 2016; Parker et al., 2012; Potosky, 2010; Praetorius et al., 2014; Tonjes & Dickhauser, 2009), or study the association between leadership and goal orientations based on cross-sectional samples (Hamstra et al., 2014; Moss & Ritossa, 2007; Runhaar et al., 2010). Furthermore, we aim to contribute to the literature on managerial coaching by investigating which specific managerial coaching practices are effective in stimulating a transition towards favorable goal orientation profiles. This extends current research that investigates the relationship between managerial coaching behavior and either individual performance (Agarwal, Angst, & Magni, 2009; Liu & Batt, 2010) or employee development (Ellinger & Bostrom, 1999; Ellinger, Ellinger, & Keller, 2003). In the current study we combine both outcomes by addressing the predictive value of managerial coaching behavior in obtaining the optimal balance between learning, performance-approach and performance avoidance goal orientations.

To obtain high levels of performance employees need a configuration of goal orientations that aim for new and challenging tasks with a continuous focus on improvement combined with a strong will to demonstrate performance, and a low emphasis on avoiding possible failure (Pastor et al., 2007). Our study

contributes to the daily practice of leaders by addressing which managerial coaching behaviors are most helpful in stimulating such a configuration of goal orientations.

2. Theory and hypotheses

2.1. Goal orientation and goal orientation profiles in the work domain

Achievement goal theory (Ames & Ames, 1984; Dweck, 1986, 1990; Nicholls, 1984) posits that employees can pursue different goals in achievement situations. In this study, we follow the trichotomous distinction of goal orientations encompassing the learning goal orientation, the performance-approach goal orientation, and the performance-avoidance goal orientation (VandeWalle, 1997). Individuals striving for learning goals take risks and try out new tasks to acquire a higher level of competences relative to their previous performance (Dweck, 1990). This preference to develop skills and competences is driven by a strong intrinsic motivation to learn and improve upon previous performance. Individuals with a learning goal orientation are thus characterized by the eagerness to learn and develop themselves, strong self-regulation and a high ability to cope with complex situations (Ames, 1992; Midgley et al., 1998; Pintrich, 2000). The learning goal orientation has been found to be associated with various work-related outcomes such as intrinsic motivation (Harackiewicz, Barron, Tauer, & Elliot, 2002), persistency (Elliot, McGregor, & Gable, 1999), feedback seeking behavior (Vandewalle & Cummings, 1997) and goal setting (Payne et al., 2007).

In contrast to the learning goal orientation, performance-approach and performance-avoidance goals refer to a strong preference to demonstrate competence to others and acquire their positive judgments about competences (Dweck, 1991; Elliot, 2005; Elliot & McGregor, 2001). People with a performance-approach goal orientation prefer to show successful achievement and high ability to others, whereas people with a performance-avoidance goal orientation participate in tasks only if there is a high chance of successful completion to prevent negative judgment on their final performance (Button et al., 1996). While performance-approach goals are mostly positive and result in persistence towards successful task completion, performance-avoidance goals

result in less help seeking, low self-efficacy, and lower levels of self-set goals (Payne et al., 2007).

According to the multiple goal perspective that was developed by Barron and Harackiewicz (2001) all three goal orientations are present within a person although in different strengths and configurations (Luo et al., 2011). Within-person configurations of goal orientations can function as a buffer or even level out the negative effects of goal orientations that are known to be associated with negative outcomes (e.g. performance-avoidance goal orientation). From the multiple goal perspective, combining the benefits of the learning goal orientation (i.e. higher self-efficacy, more intrinsic motivation for learning) with the benefits of a performance approach goal orientation (i.e. work effort or positive self-concept) might result in even higher levels of individual performance (Pastor et al., 2007).

Recent studies have successfully explored goal orientation profiles in samples of students using the trichotomous distinction of goal orientations (Jansen in de Wal et al., 2015; Luo et al., 2011; Pastor et al., 2007; Schwinger et al., 2016; Schwinger & Wild, 2012; Tuominen-Soini et al., 2008, 2011, 2012), resulting in three to six different goal orientation profiles. In all studies, a majority of the sample was found to have a diffuse profile (average scores on all goal orientations). Other frequently found profiles include a combination of a high performance approach and learning goal orientation and a low performance-avoidance goal orientation (success-oriented profile) (Luo et al., 2011; Pastor et al., 2007; Schwinger & Wild, 2012; Tuominen-Soini et al., 2008, 2011, 2012)and profiles dominated by one of the goal orientations (high learning or high performance-avoidance goal orientation profiles) (Pastor et al., 2007; Schwinger & Wild, 2012; Tuominen-Soini et al., 2008, 2011, 2012).

2.2. Stability of goal orientation profiles over time

Studies on the dynamic nature of goal orientation profiles of students (Jansen in de Wal et al., 2015; Schwinger et al., 2016; Schwinger & Wild, 2012; Tuominen-Soini et al., 2011) report varying results. The largest change between goal orientation profiles over time is found in studies of young children (age 5 to 7), measuring goal orientations over a longer time span (e.g., more than 2 years) (13% - 35%) (Schwinger et al., 2016; Schwinger & Wild, 2012). When children grow

older, there generally is a transition from learning goals to performance-approach and performance-avoidance goals (Archambault, Eccles, & Vida, 2010). In older children (age 15 to 17) goal orientation profiles are relatively stable (60%) (Tuominen-Soini et al., 2011).

Although change in goal orientation profiles of employees has never been investigated, a handful of studies have evaluated the change in single goal orientations of workers over time (Kooij & Zacher, 2016; Parker et al., 2012; Potosky, 2010; Praetorius et al., 2014; Tonjes & Dickhauser, 2009). In these studies, the time between measurement moments varied from three months (Kooij & Zacher, 2016; Praetorius et al., 2014) to five years (Potosky, 2010). All these studies found the learning goal orientation to be less stable (test-retest correlation varied between .48 and .69) compared to the performance-approach and performance-avoidance orientation (test-retest correlation varied between .61 and .81). An explanation for the instability of learning goal orientations could be that the situation-specific focus on learning that may vary across tasks and work environments, whereas the urge to demonstrate competence may vary less across situations (Praetorius et al., 2014). Until now, no studies have investigated the change of goal orientation profiles of working adults. However, changes in single goal orientations may result in new configurations of goal orientations and therefore a different goal orientation profile that is differently related to outcomes. Because our study is the first to address the stability of employee goal orientation profiles the nature of our study is explorative and no specific hypotheses regarding the number of goal orientation profiles and level of stability will be formulated. However, based on previous research in student samples (Luo et al., 2011; Pastor et al., 2007; Schwinger & Wild, 2012) we expect between three and six goal orientation profiles including the frequently found diffuse profile (average scores on all goal orientations) and the success-oriented profile (high performance approach combined with high learning goal orientation and low performance avoidance goal orientation).

2.3. The role of managerial coaching in profile membership and profile change

As stated before, some goal orientation profiles are more favorable than others. The success-oriented profile, in which high levels of learning goal orientation

are combined with high levels of performance-approach goal orientation and low levels of performance-avoidance goal orientation can be expected to yield the best results for both learning and individual performance (Elliot & Church, 1997; Pintrich, 2000). The goal orientation profile that includes high levels of performance-avoidance goals can be expected to be associated with lower levels of performance and learning (Payne et al., 2007).

Trait activation theory (Tett & Burnett, 2003) posits that personality traits are expressed as responses to trait-relevant situational cues. Because coaching managers stimulate employees to frame achievement situations as opportunities for development and task mastery instead of as chances to fail (Latham, Seijts, & Slocum, 2016) we hypothesize that managerial coaching behavior can be a specific environmental cue that may influence latent goal orientation profiles. Although managerial coaching is highly debated in terms of its definition and operationalization (Batson & Yoder, 2012; Ellinger et al., 2008; Hagen, 2012), a common theme in the literature on coaching is that it entails one-on-one interactions between the leader and the employee at the workplace aimed at guiding and inspiring improvements in an employee's work performance (Hagen, 2012; Heslin et al., 2006) or facilitating employee learning (Ellinger, Watkins, & Bostrom, 1999). Based on an extensive literature review of the coaching literature, Heslin et al. (2006) derived three integral components of managerial coaching. *Guidance* includes the communication of clear performance expectations and constructive feedback regarding both performance outcomes and how to improve. *Facilitation* entails providing support in analyzing past performance and exploring ways to solve problems and enhance performance. By facilitating creative thinking and being a sounding board, team leaders encourage employees to try out new initiatives and challenging tasks. *Inspiration* refers to encouraging employees to use their full potential and to focus on continuous development (Heslin et al., 2006).

Because guidance behavior includes help in analyzing performance and providing constructive feedback, it may stimulate workers to develop their skills and competences and thereby to take a learning goal orientation. Moreover, by giving suggestions for how to improve performance guidance behaviors are likely to reduce the fear of failure and thereby diminish a performance avoidance orientation whereas the guidance regarding performance expectations may facilitate a performance approach orientation. Inspiration

behavior includes expressing confidence in the employees' ability to develop and improve, encourage the employee for continuously development and support in taking on new challenges (Heslin et al., 2006)+,·.. These behaviors are likely to strengthen the confidence of employee when taking on new tasks and thereby to reduce a performance-avoidance goal orientation and to increase a learning goal orientation. Moreover, the support in taking on new challenges may also stimulate a performance approach goal orientation. The facilitation component of managerial coaching behavior may stimulate a performance approach orientation by facilitating creative thinking to help solve problems. Furthermore, by acting as a sounding board to facilitate idea development and providing encouragement of exploring behavior managers may reduce the fear of failure and stimulate employee development, thereby leading to lower levels of performance avoidance orientation and higher levels of learning goal orientation. For the reasons we outlined above, we hypothesize:

Hypothesis 1: Managerial coaching behavior (T1) in terms of (a) guidance, (b) facilitation, and (c) inspiration, is positively related to the likelihood that an employee will have a success-oriented goal orientation profile (a high learning, a high performance-aproach and a low performance-avoidance goal orientation) (T1) compared to having other profiles.

Moreover, we expect that managerial coaching behavior at T1 may stimulate a profile change over time. Button et al. (1996) suggest that individuals with low levels of goal orientations might be more susceptible to situational demands and to change compared to individuals with higher levels of goal orientations. Although we concur with these authors that high levels of specific goal orientations may be less easy to change, based on the trait activation theory (Tett & Burnett, 2003) we would expect that especially moderate levels of goal orientations have the potential to transform as a result of trait relevant cues. After all, low levels of a particular goal orientation may suggest that this dispositional trait is not present in a person, making it impossible to further stimulate this trait. More specifically, we expect that guidance managerial coaching behavior will support the transition from moderate levels of goal orientations towards the success-oriented profile because the given feedback and support in analyzing performance strengthens employees learning goal orientation and

performance-approach goal orientation by addressing opportunities to develop and improve previous work performance. In the meantime, guidance behavior reduces the performance-avoidance goal orientation because the steps to take to improvement are discussed which can diminish fear of failure. Furthermore, we expect that facilitative managerial coaching behavior that supports employees to explore challenging opportunities at work can be expected to stimulate already moderately present levels of learning and performance-approach goal orientation and to reduce levels of performance-avoidance goal orientation when providing employees with hands-on support when they are performing new and challenging tasks. Moreover, inspirational managerial coaching can be expected to reduce the level of performance-avoidance goal orientation by expressing confidence in employee's ability to perform well in tasks at work and meanwhile strengthen the performance-approach and learning goal orientation of the employee. In contrast, when an employee scores low or high on learning and performance-approach goal orientations, there is no latent potential that can be further activated by the manager. Hence, we do not expect change from profiles with low levels of learning or performance-approach goal orientations and high levels of performance-avoidance goal orientations towards the success-oriented profile. Therefore, we hypothesize:

Hypothesis 2: Managerial coaching behavior (T1) in terms of (a) guidance, (b) facilitation, and (c) inspiration, is positively related to the likelihood that an employee will transfer from a profile with moderate levels of learning, and/or performance-approach and/or performance-avoidance goal orientation to a success-oriented profile (a high learning, a high performance-aproach and a low performance-avoidance goal orientation) (T2).

3. Methods

3.1. Sample and Procedure

This study was conducted among teachers in Vocational Education and Training (VET) colleges in the Netherlands. We approached all VET colleges in the Netherlands by sending them a flyer via e-mail, inviting them for

a personal meeting to introduce our study. In these meetings, teachers were informed about the goals of this study and afterwards team leaders could decide to participate with all teachers from a specific educational program. The team leaders of these teams are responsible for leadership and execution of various HR activities such as performance appraisal and recruitment. Surveys were administered using an online program, enabling teachers to participate in the survey at a convenient moment in time. At the start of the survey, teachers were informed about the purpose of the data collection and the anonymity of their participation. Two waves of data were collected with one year between the measurement moments. A total of 984 teachers participated at T1, and a total of 757 teachers participated at T2. Full data on both waves was available for 521 of the teachers (53% retention rate).

The teachers who participated were between 21 and 68 years old (M = 47.06, SD = 11.16) at the first wave of data collection and nearly half (47.2%) of the participants were men (comparable to 52% men in the overall educational workforce, and an average age of 44.0 years; CBS, 2017. Participants had on average 14.53 years of work experience (SD = 10.78) and were highly educated (27.9% academic education, 56.7% higher professional education, 9.7% vocational education, 5.7% other). This was comparable to the population of vocational oriented teachers in the Netherlands, where on average 76.7% is highly educated (CBS, 2017). In the structure of team-based work that Dutch VET colleges have adopted, team leaders have frequently planned and informal meetings with teachers. Three quarters of the teachers (75.5%) reported to have informal meetings with their team leader at least once a week and 63.5% indicated having formal meetings at least once a month. All sectors of vocational education were represented in the data of the first wave with 21.2% of the teachers from the technical sector, 32.2% of the teachers from the health and welfare sector, 19.8% of the teachers from the commerce sector, 5.5% of the teachers from the agricultural sector, and 3.8% of the teachers working in multiple sectors.

3.2. Measures

3.2.1. Goal Orientation

Goal orientation was measured with the Work Domain Goal Orientation instrument developed by VandeWalle (1997). Learning goal orientation (e.g., "I am willing to select a challenging work assignment that I can learn a lot from") was measured with five items, Cronbach's α_{T_1}= .86, Cronbach's α_{T_2}= .87. Performance-approach goal orientation (e.g., "I enjoy it when others at work are aware of how well I am doing") was measured with four items, Cronbach's α_{T_1}= .82, Cronbach's α_{T_2}= .84. The performance-avoidance goal orientation was measured with four items (e.g., "I am concerned about taking on a task at work if my performance would reveal that I had low ability."), Cronbach's α_{T_1}= .81, Cronbach's α_{T_2}= .81. Items were rated on a 5-point Likert scale (1 = *strongly disagree* and 5 = *strongly agree*). A longitudinal confirmatory factor analysis was performed on the Work Domain Goal Orientation instrument of VandeWalle (1997) to verify the factor structure. As the goal orientation construct originally was built up into two components (mastery vs. performance goals), three competing factor structures (one factor, two factors, three factors) were evaluated. Results of the longitudinal confirmatory factor analyses indicated that the three-factor structure had the most adequate fit to the data $\chi^2(284) = 1154$, $p < .001$, RMSEA = .05, 90% CI [.047 - .053], TLI = .91, CFI = .92, SRMR = .06. The alternative two-factor ($\Delta\chi^2$ (9) =2674, $p < .001$, RMSEA = .10, 90% CI [.097 - .102], TLI = .63, CFI = .67, SRMR = .17) and one-factor model ($\Delta\chi^2(14) = 4711$, $p < .001$, RMSEA = .12, 90% CI [.121 - .126] , TLI = ..434, CFI = .491, SRMR = .171) were significantly worse compared to the three-factor goal orientation model. Therefore, the three-factor solution including: learning, performance-approach, and performance-avoidance goal orientation was used in further analyses and the factor scores (M = 0, SD = 1) were saved for each goal orientation dimension.

3.2.2. Managerial coaching behavior

Managerial coaching behavior was measured with the ten-item scale of Heslin et al. (2006). In this scale three types of managerial coaching were distinguished. Inspiration was measured with three items (e.g., 'To what extent

does your manager encourage you to continuously develop and improve?'), Cronbach's α_{T1}= .92,, Cronbach's α_{T2}= .93. Guidance was measured with four items (e.g., 'To what extent does your manager provide guidance regarding performance expectations?'), Cronbach's α_{T1}= .93, Cronbach's α_{T2}= .94, and facilitation was measured with three items (e.g., 'To what extent does your manager act as a sounding board for you to develop your ideas?), Cronbach's α_{T1}= .89, Cronbach's α_{T2}= .89. Items were rated on a 5-point Likert scale (1 = *strongly disagree* and 5 = *strongly agree*). The longitudinal confirmatory factor analysis for both the cross-sectional and longitudinal data indicated an appropriate model of the three-factor structure ($\chi^2(155)$ =727, $p < .001$, RMSEA = .055, 90% CI [.051 - .059], TLI = .96, CFI = .97, SRMR = .024) over the one-factor structure ($\chi^2(169)$ =2552, $p < .001$, RMSEA = .108, 90% CI [.104 - .111] , TLI = .85, CFI = .87, SRMR = .047). Results of the longitudinal confirmatory factor analyses indicated that the three-factor structure had the most adequate fit to the data, $\chi^2(155)$ = 532.57, $p < .001$, RMSEA = .069, 90% CI [.062 - .075], TLI = .96, CFI = .96, SRMR = .02. The alternative one-factor model ($\Delta\chi^2(14)$ = 1173.79, $p < .001$, RMSEA = .133, 90% CI [.127 - .138] , TLI = .84, CFI = .85, SRMR = .05) was significantly worse compared to the three-factor managerial coaching model. Therefore, the three-factor structure (guidance, inspiration, and facilitation) was used in further analyses and the factor scores (M = 0, SD = 1) for the three-factor structure of managerial coaching behavior were saved.

3.2.3. Control variables

Age was included as a control variable in this study because previous studies found older workers to have a lower desire and motivation for learning, thereby possibly influencing the assignment of older teachers to profiles with relatively low levels of learning goal orientation (de Lange et al., 2010; Kanfer & Ackerman, 2000; Kooij & Zacher, 2016).

3.3. Analyses

We tested our hypotheses in two steps. In a first step we estimated the latent transition model (LTM). The analyses were performed using Latent Gold 5.1 (Vermunt & Magidson, 2013). The three goal orientations (learning, performance-approach, and performance-avoidance) were used as indicators for

the latent profiles. LTM is a longitudinal extension of the latent profile analysis, which evaluates the probability of transition between profiles at multiple waves. Although it is not required to use the same number of profiles at the different points in time, this is recommended because it improves insight in shifts between goal orientation profiles over time (Kam, Morin, Meyer, & Topolnytsky, 2013). To evaluate model fit, multiple fit-indices were used. First, the Bayesian Information Criterion (BIC) was evaluated. The BIC uses the fit of a model and evaluates it by model complexity, with lower values being better. As such, it works like an Occam's Razor, preferring a simpler model over a more complex model when their fit is the same (Nylund et al., 2007). Second, the entropy statistic was used to verify the accuracy of classification into profiles. The higher the entropy (which should be preferably over .70) the more the profiles are separable. A well-known issue in latent profile analysis is that it may pick up very specific aspects in the data as distinct profiles. To control for this and to verify theoretical interpretation, we ensured that each profile in our analyses included at least 5% of the respondents (Nylund et al., 2007). Additionally, the most likely profile membership of each observation at each wave was saved and used for further analyses.

In a second step, we conducted a multinomial logistic regression analysis to estimate the relationships between managerial coaching behaviors and goal-orientation profile membership across wave 1 and wave 2. The main characteristic of multinomial logistic regression analysis is the estimation of *k*-1 effects (*k* is the total number of profiles), relative to a reference group. To test our hypotheses, three different models were evaluated. To test hypothesis 1, managerial coaching at T1 and age as a control variable were regressed upon the different goal orientation profiles using the success-oriented profile as a reference category. To evaluate hypothesis 2, 3, and 4, a similar model was tested with the different change patterns as outcome variables. The reference category was different in each model, depending on the formulated hypothesis. Multinomial regression analyses result in odds ratios that simplify the interpretation. When the odds ratio was found to be above 1, this implies that when the value of managerial coaching (or age) increases, the likelihood of being assigned to a specific profile is higher than the likelihood of being assigned to the reference profile. An odds ratio below 1 implies that when the value of managerial coaching (or age)

increases, the likelihood of being assigned to that specific profile is lower than the likelihood of being assigned to the reference profile (Kam et al., 2013).

4. Results

4.1. Descriptive statistics

Table 4.1 provides the correlations among the variables included in this study. The results show that the different goal orientations were significantly related to each other. Learning goal orientation on T1 was related to performance-approach goal orientation but the association diminished over time (r = .25, p < .001, T1; r = .15, p < .001, T2). Two components of managerial coaching behavior (T1) were positively related to learning goal orientation, namely guidance (r = .16, p < .001), and inspiration, (r = .18, p < .001). All three components of managerial coaching (T1) behavior were positively related to the performance-approach goal orientation (T1) namely, facilitation (r = .10, p < .05), guidance (r = .10, p < .05), and inspiration (r = .10, p < .05). Managerial coaching behavior (T1) was not related to the performance-avoidance goal orientation (T1).

4.2. Latent transition model

Table 4.2 reports the fit indices for the three, four and five goal-orientation profile solutions. As can be seen from this table, the values for the BIC decreased between the three and four-profile solution (ΔBIC = -91) but increased between the four and five-profile solution (Δ*BIC* = 19), indicating that a four-profile solution had the best fit. The value for the entropy (E = .80) confirmed this finding. Up to four profiles, the entropy increased; however, a slight decrease was identified for the five-profile solution (E = .78). For this reason, we retained the four-profile solution for further analyses and used the most likely profile assignment of each observation.

Based on the mean scores (see Figure 4.1) we identified a diffuse, a high-avoidance, a moderate-learning, and a success-oriented profile. Most teachers were assigned to the *diffuse* profile (47.9%) representing teachers with an equal focus on all three goal orientations. The *moderate-learning* profile (19.0%) represented

Table 4.1 - Correlations among the Study Variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Goal Orientation													
11. Learning (T1)	1.00												
12. Learning (T2)	.70***	1.00											
13. P-approach (T1)	.25***	.22***	1.00										
14. P-approach (T2)	.15**	.21***	.62***	1.00									
15. P-avoidance (T1)	-.36***	-.34***	.20***	.16***	1.00								
16. P-avoidance (T2)	-.32***	-.35***	.13**	.21***	.56***	1.00							
Managerial coaching behavior													
17. Guidance (T1)	.16***	.12**	.10*	.09*	.02	.01	1.00						
18. Facilitation (T1)	-.08	-.07	-.10*	-.10*	-.03	-.04	-.71***	1.00					
19. Inspiration (T1)	.18***	.16***	.10*	.01*	-.03	.02	-.70***	-.64***	1.00				
20. Guidance (T2)	.13**	.22***	.05	.08	-.01	-.05	.46***	-.36***	.35***	1.00			
21. Facilitation (T2)	-.08	-.14**	-.07	-.10*	-.03	-.04	-.47***	.52***	-.42***	-.71***	1.00		
22. Inspiration (T2)	.12**	.16**	.07	.06	-.02	-.01	.42***	-.36***	.41***	.73***	-.69***	1.00	
Control variable													
23. Age	-.15**	-.22***	-.14**	-.11*	.06	.07	-.08	.05	-.03	-.13**	.08	-.07	1.00

Note. *** $p < .001$, ** $p < .01$, *$p < .05$;

Table 4.2 - Results of the Latent Transition Analyses

Number of Profiles	*BIC*	Entropy
3	8352	.72
4	8261	.80
5	8280	.78

Note. BIC = Bayesian Information Criterion.

Table 4.3 - Transition Probabilities for the Latent Transition Analysis

Wave 1		Wave 2			
		Diffuse	High-Avoidance	Moderate-Learning	Success-Oriented
Diffuse	Prob.	.9150	.0115	.0015	.0719
N = 47.9%	*N*	227	0	0	18
High-Avoidance	Prob.	.0027	.9787	.0180	.0007
N = 19.9%	*N*	3	97	4	0
Moderate-Learning	Prob.	.0098	.0437	.9233	.0232
N = 19.0%	*N*	0	2	87	4
Success-Oriented	Prob.	.2744	.0012	.0609	.6635
N = 13.2%	*N*	18	0	2	48

Note.

N = 517; Probabilities on the diagonal indicate the stability probabilities (staying in the same profile).

teachers with a moderate level of learning goal orientation and a low score on performance-approach, and performance-avoidance goals. The *high-avoidance* profile (19.9%) contained teachers with low levels of learning goal orientation and performance-approach goals but a high level of performance-avoidance goals. The *success-oriented* profile (13.2%) included teachers who strive for both learning and performance-approach goals, and who have low scores on performance-avoidance goals.

In a next step, we examined the stability and change between goal orientation profiles over time (Table 4.3). As can be seen from the most likely latent profile patterns the overwhelming majority of teachers had stable goal orientation profiles across both waves. Among the 517 teachers, only 51 teachers (9.8%) changed their membership of a goal orientation profile. As can be seen from Table 4.3, 22 profile changes were made towards the success-oriented profile. Among these changes, 18 adopted the diffuse profile at T1 and 4 adopted the moderate-learning profile at T1. No teachers changed from the high-avoidance goal orientation profile towards the success-oriented profile.

Figure 4.1. - Goal Orientation Profiles as per the Final Solution of the Latent Transition Model

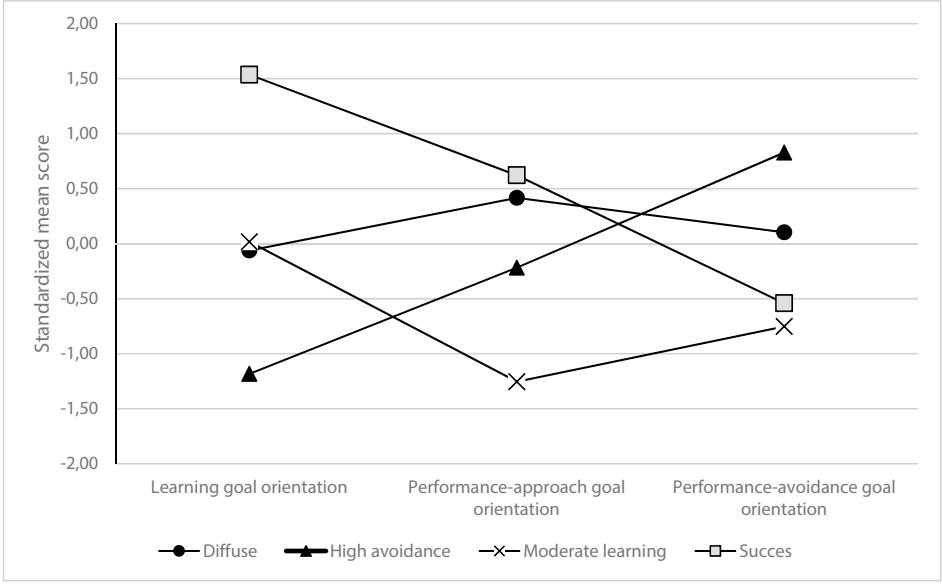

Table 4.4 - The Roles of Age and Managerial Coaching Behavior in Predicting Profile Membership on Wave 1

	Diffuse			High-Avoidance			Moderate-Learning		
	B	SE	OR	B	SE	OR	B	SE	OR
Age	.04***	.01	1.04	.05***	.01	1.05	.04**	.01	1.04
Managerial Coaching Behavior									
Guidance	.61*	.26	1.84	.90**	.31	2.47	.35	.30	1.42
Facilitation	-1.14***	.30	.32	-1.51***	.35	.22	-.95**	.35	.39
Inspiration	.37	.27	1.44	.07	.31	1.07	.22	.31	1.24

Note: $N = 517$; *** $p < .001$, ** $p < .01$, * $p < .05$; Reference category = success-oriented profile

4.3. Predictors of profile membership

As can be seen from Table 4.4, guidance (T1) was positive associated with assignment to the diffuse and high-avoidance goal orientation profile at T1. The large odds ratios ($OR = 1.84$, $p < .05$ for the diffuse profile, and $OR = 2.47$, $p < 01$, for the high-avoidance profile) indicate that teachers who perceived higher levels of guidance (T1) have a lower probability to be assigned to the success-oriented profile. Therefore, Hypothesis 1a was not supported. Facilitation (T1) was positively related to being assigned to the success-oriented profile at T1 (Diffuse profile: $OR = .32$, $p < .001$; High-avoidance profile: $OR = .35$, $p < .001$; Moderate-Learning profile: $OR = .39$, $p < .001$), confirming Hypothesis 1b. Inspirational managerial coaching behavior (T1) was not related to initial profile assignment at T1 (Diffuse profile: $OR = 1.44$, $p > .05$; High-avoidance profile, $OR = 1.07$, $p > .05$; Moderate learning profile: $OR = 1.24$, $p > .05$), and therefore Hypothesis 1c was not supported. In addition to managerial coaching, age predicted goal orientation profile membership at T1. The odds ratios (Diffuse profile: $OR = 1.04$, $p < .001$; High-avoidance profile: $OR = 1.05$, $p < .001$; Moderate-learning profile: $OR = 1.04$, $p < .01$) indicated that younger teachers have a higher probability to be assigned to the success-oriented profile.

4.4. Predictors of profile change

Two different multinomial regression analyses were performed to investigate the transition from the diffuse profile towards the success-oriented profile, and from the moderate learning profile to the success-oriented profile. As can be seen in Table 4.5, facilitation (T1) increased the likelihood of a change from a diffuse towards a success-oriented profile compared to the likelihood of remaining in the diffuse profile ($OR = .22$, $p < .01$). Although facilitation (T1) was also positively related to the likelihood of making the opposite transition from the success-oriented to the diffuse profile, the odds-ratio (OR = .13, $p < .01$) indicates that as a result of facilitation, teachers were more likely to change from the diffuse towards the success-oriented profile. Facilitation (T1) also increased the probability of a transfer from the moderate-learning profile towards the success-oriented goal orientation profile compared to remaining in the moderate-learning goal orientation profile ($OR = .25$, $p < .05$) or to remain stable in the high-avoidance goal orientation profile ($OR = .15$, $p < .001$). As presented in Table 4.6, no significant effects for managerial coaching behavior (T1) were found when predicting change from the moderate-learning to the success-oriented profile. Therefore, Hypothesis 2a was only supported for facilitative managerial coaching behavior predicting change from the diffuse to the success-oriented profile and not supported for the change from the moderate learning to the success-oriented profile. As can be seen in Table 4.5 no significant effects were found for managerial coaching behavior guidance (T1) and inspiration (T1). Therefore, hypothesis 2b and Hypothesis 2c were not supported for both the change of the moderate learning and diffuse profile to the success-oriented profile.

Age was a significant predictor of the transfer towards the success-oriented profile. Older teachers were more likely to stay within their profile when they were initially assigned to the diffuse ($OR = 1.08$, $p < .001$), high-avoidance ($OR = 1.09$, $p < .001$), or moderate-learning profile ($OR = 1.07$, $p < .001$).

Table 4.5 - The Role of Managerial Coaching Behavior in Predicting Change from the Diffuse to the Success-Oriented Profile

					Managerial coaching behavior		
Profile T1		**Profile T2**	*N*	**Age**	**Guidance**	**Facilitation**	**Inspiration**
				Odds-ratio	***Odds-ratio***	***Odds-ratio***	***Odds-ratio***
Diffuse	→	Diffuse	234	1.08***	1.94	.22**	1.92
High-Avoidance	→	Diffuse	3	1.06	.40	.71	.67
Success-Oriented	→	Diffuse	18	1.04	3.56	.13**	1.43
High-Avoidance	→	High-Avoidance	97	1.09***	2.69	.15***	1.44
Moderate-Learning	→	High-Avoidance	2	1.06	2.27	.43	.21
High-Avoidance	→	Moderate-Learning	4	1.02	.51	.56	.31
Moderate-Learning	→	Moderate-Learning	87	1.07***	1.61	.25*	1.66
Success-Oriented	→	Moderate-Learning	2	1.02	.94	.67	.61
Moderate-Learning	→	Success-Oriented	4	1.09**	1.26	.12	1.11
Success-Oriented	→	Success-Oriented	48	1.03	1.03	.71	1.35

Note:

$N = 517$; *** $p < .001$, ** $p < .01$, * $p < .05$;

Reference category = transition from the diffuse to the success-oriented profile

Table 4.6 - The Role of Managerial Coaching Behavior in Predicting Change from the Moderate-Learning to the Success-Oriented Profile

					Managerial coaching behavior		
Profile T1		**Profile T2**	*N*	**Age**	**Guidance**	**Facilitation**	**Inspiration**
				Odds-ratio	***Odds-ratio***	***Odds-ratio***	***Odds-ratio***
Diffuse	→	Diffuse	234	.99	1.55	1.87	1.74
High-Avoidance	→	Diffuse	3	.98	.32	6.07	.60
Success-Oriented	→	Diffuse	18	.95	2.85	1.11	1.30
High-Avoidance	→	High-Avoidance	97	1.00	2.14	1.24	1.30
Moderate-Learning	→	High-Avoidance	2	.98	1.81	3.68	.19
High-Avoidance	→	Moderate-Learning	4	.94	.41	5.81	1.09
Moderate-Learning	→	Moderate-Learning	87	.99	1.29	2.09	1.50
Success-Oriented	→	Moderate-Learning	2	.94	.75	5.71	.55
Diffuse	→	Success-Oriented	18	.92**	.80	8.52	.90
Success-Oriented	→	Success-Oriented	48	.94*	.82	6.03	1.22

Note:

$N = 517$; * $p < .05$, ** $p < .01$;

Reference category = transition from the moderate-learning to the success-oriented profile

5. Discussion

This study which is based on a two-wave study among 521 teachers provides evidence for the existence of four distinct goal orientation profiles over time; the diffuse profile, the success-oriented profile, the moderate-learning, and the high-avoidance profile. Thereby, we extend the insight regarding the within-person coexistence of goal orientations to a working population. By modeling goal orientation profiles instead of including interactions between single goal orientations, this study contributes to the call for more advanced research on goal orientation within organizations (Payne et al., 2007).

Our study contributes to the understanding of change in goal orientation profiles at work by showing that employee goal orientation profiles are highly stable. This is in line with the handful of studies on change in students' goal orientation profiles (Jansen in de Wal et al., 2015; Schwinger et al., 2016; Schwinger & Wild, 2012; Tuominen-Soini et al., 2011). However, we also found employee goal orientation profiles to be susceptible to influences from managerial behavior (Payne et al., 2007). Results of our study demonstrate that managerial coaching behavior was a predictor of initial profile assignment at T1. In line with theory, employees who perceived their manager as facilitating them in exploring new approaches to tasks, trying out alternatives, and thinking along when problems occur, were more likely to belong to a success-oriented profile. An unexpected finding was that employees who perceived their manager to focus on guidance towards higher levels of performance by giving performance feedback or suggestions for performance improvement were more likely to have a high-avoidance or diffuse goal orientation profile, compared to having a success-oriented profile. Our finding that guidance behavior had a negative impact on the likelihood of having a success-oriented profile indicates that performance feedback does not stimulate an increase in the performance-approach or learning orientation, even when it is accompanied by help to analyze past performance, constructive feedback regarding areas for improvement and useful suggestions regarding performance improvement. Apparently, the communication of performance expectations and the feedback on past performance triggers fear of failure more than it triggers a focus on development and improvement. This is

in line with studies on performance feedback that show that performance feedback is not necessarily effective to enhance task performance (Kluger & DeNisi, 1996). Future research could investigate to what extent feedforward interventions (Kluger & Nir, 2010) that focus on positive experiences in the past and on the conditions needed to achieve similar experiences in the future may offer a more effective alternative for stimulating a success-oriented profile.

We also found that managerial coaching behavior was related to the transition between goal orientation profiles over time. Our finding that facilitative managerial coaching behavior predicted changes from the diffuse towards the success-oriented profile indicates that by being a constructive conversation partner and by emphasizing development in relation to performance, managers may activate employees' latent tendency to focus on professional development and performance improvement (Sue-Chan, Wood, & Latham, 2010). In contrast to facilitation, providing inspiration was not related to employees' initial profile or their profile change over time. This might be because inspiration refers mainly to communicating trust in employees' ability to develop whereas facilitation provides more hands-on support from the manager during the execution of challenging tasks. Future research should try to replicate these findings by estimating separate effects for each of the managerial coaching behaviors on employee development and performance. This will contribute to the insight in what can considered to be the most effective managerial coaching behaviors.

Our results indicated that age was negatively related to membership of the success-oriented profile and that older workers were less likely to change their goal orientation profile over time. This is in line with the socio-emotional selectivity theory (Carstensen, 2006), which posits that older workers perceive time as limited and therefore pursue goals that are less future focused. Therefore, older employees may invest less time and energy in continuous development and focus more on avoiding low performance and failure in their regular work tasks (de Lange et al., 2010; Elliot & Dweck, 2005). Because of the aging workforce (OECD, 2015), more research on transition of goal orientation profiles among older workers is recommended to broaden our knowledge on age and the motivation to continue working (Kooij, De Lange, Jansen, & Dikkers, 2008).

5.1. Theoretical implications

Studies on goal orientations in the work domain usually focus on employee outcomes such as creativity (Gong, Huang, & Farh, 2009), asking for feedback (Vandewalle & Cummings, 1997), job satisfaction (Janssen & Van Yperen, 2004), and job performance (Janssen & Van Yperen, 2004; Porath & Bateman, 2006). However, scant knowledge is available on how these positive employee outcomes may be achieved by influencing goal orientation profiles. Our study responds to the call for more research on situational characteristics that can influence goal orientations over time (Kaplan & Maehr, 2007; Praetorius et al., 2014) and adds to the growing body of literature that suggests that leaders are able to influence goal orientations of workers. Although we found that goal orientation profiles are highly stable, the significant results regarding the group of teachers that changed goal orientation profiles do indicate that managerial coaching behavior can influence these relatively stable characteristics. By applying trait activation theory (Tett & Burnett, 2003) and showing that especially goal orientations that are present at moderate levels are susceptible to the influence of coaching behavior our study extends goal orientation theory by pointing out under which conditions relatively stable configurations of goal orientations can be changed.

5.2. Limitations and future research

Although the profile analysis on two-wave data is an important strength of our study, our study also has some limitations. First, we conducted our study among teachers and therefore the generalizability of our results is limited to employees working in the educational sector. Future research should further examine the composition of goal orientations profiles and the relationship with managerial coaching behavior in different sectors. Second, this study included only two waves of data with a one-year interval. Adding more waves of data with different time intervals between the measurements could confirm the relative stability of goal orientation profiles and provide new insights into the time needed for changes in goal orientation profiles. Third, since we found that age was related to profile membership, a longitudinal study could investigate the

relationship between age and goal orientation profiles throughout the career including possible moderators of this relationship (e.g., work experience, stereotype threat).

5.3. Practical implications

This study indicates that managers can have a small though significant influence on the goal orientation profiles of their subordinates. Based on our results, we suggest that managers who want their employees to adopt a success-oriented goal orientation profile display facilitative coaching behaviors. When managers make time to act as a sounding board for employees, facilitate their creative thinking to help solve problems and encourage them to explore alternative ways of working, employees are more likely to switch towards the preferred success-oriented goal orientation profile. Facilitative behaviors prove to be more effective than providing inspiration, probably because facilitation refers to more hands-on support than inspiration, which is mainly about expressing confidence in employee capacity to develop. Moreover, we suggest that managers should think twice before providing guidance in the form of giving performance feedback or suggestions on how to improve performance, as this may decrease the learning and performance approach orientation of their employees. These implications may have particular relevance for the educational sector, where we conducted our study. Our study shows that team leaders can make a difference when it comes to teachers' orientation towards learning and performance.

CHAPTER 5

Team learning in teacher teams: a systematic review of literature[4]

ABSTRACT

Teacher teams are becoming a popular unit of organization within schools because teamwork may facilitate team learning and thereby contribute to improved performance and quality of educational programs. This paper reviews the antecedents, processes and outcomes of team learning in teacher teams. Using a systematic literature search, 20 articles (ten qualitative, nine quantitative, one mixed-methods) were selected and analyzed. Results indicate that team learning in teacher teams is promoted by team leaders who facilitate reflective discussions and hindered by the limited time and depth of conversation in team meetings. Suggestions for future research are addressed.

Keywords: *Team learning, teacher teams, systematic review*

4 This chapter is under review as Kunst, E.M., Van Woerkom, M., Zoethout, H. & Poell, R.F. (n.d.). Team learning in teacher teams: a systematic review of literature.

CHAPTER
5

1. Introduction

In order to respond to the changing expectations from the government and society regarding their performance, schools tend to restructure and optimize their organization (Somech & Drach-Zahavy, 2007). A popular option for restructuring is the use of teams as organizational units within schools because teacher teams generate opportunities to stimulate team learning (Stewart, 2006). Team learning involves a continuous dialogue between teachers where information, ideas and perspectives are shared, critically discussed, and reflected upon, resulting in shared mental models (Decuyper et al., 2010; Edmondson, 1999; Gibson & Vermeulen, 2003). The use of teacher teams is expected to enhance team learning because teachers meet more regularly with each other and invest time in conversations about the curriculum, thereby broadening their scope of knowledge beyond their own subject (Pounder, 1998).

Although several systematic literature reviews on team learning exist (Decuyper et al., 2010; Hannes et al., 2013; Timmermans et al., 2012), the results from these cross-sectoral reviews cannot be copied one-on-one to teacher teams. One key characteristic of teachers' work is that it is in large part performed individually and therefore teachers have to rely on their own skills and talents to solve problems day-to-day problems (Somech, 2008). This means that teacher teams are characterized by relatively low levels of interaction and task interdependence compared to teams in other work contexts (e.g., nursing teams).

Previous studies on collective learning among teachers have mainly focused on professional-learning communities (PLC) and communities of practice (CoP), that are primarily aimed at enhancing professional learning. In contrast, our study focuses on learning processes that take place in teams in which teachers collaborate for organizational purposes (Cohen & Bailey, 1997). In these work teams, learning is not a purpose in itself, but a by-product of the work process. By collaborating in the team, teachers are unconsciously confronted with opportunities for learning because they share knowledge and may have constructive conversations with other teachers about how to solve problems (Manuti, Pastore, Scardigno, Giancaspro, & Morciano, 2015). However, scant knowledge is available regarding the factors that may stimulate or hinder

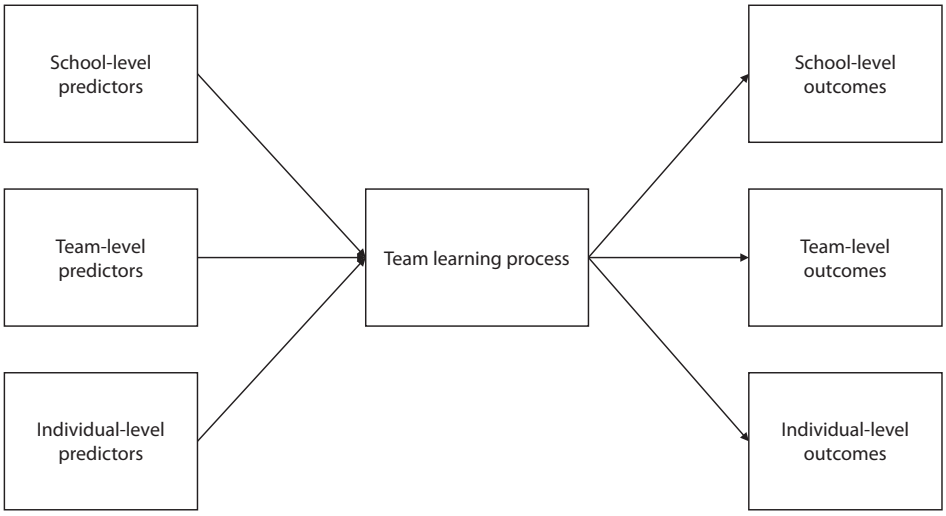

Figure 5.1. - Conceptual Model Used in this Study

these learning processes in teacher teams (Clement & Vandenberghe, 2000). The present review aims to fill this gap by synthesizing the available empirical research on team learning in teacher teams. By analyzing the outcomes of qualitative, quantitative and mixed method studies, we aim to contribute to the insight into the different measurement methods, analyses and their related results. Also, by identifying gaps in the literature we point out opportunities for future research.

Figure 5.1 presents the conceptual framework used in this systematic literature study. In line with the Input-Process-Output approach (Ilgen, Hollenbeck, Johnson, & Jundt, 2004), team learning is positioned at the heart of this model, whereas independent and dependent variables are defined at the level of individuals, teams and schools.

2. Defining the key concepts of this systematic review

In general, a team can be defined as "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or the corporation), and who manage their relationships across organizational boundaries." (Cohen & Bailey, 1997, p. 241). Although teachers in teacher teams work together on the mutual goal of delivering a high-quality educational program and part of the work may be performed collaboratively (e.g., curriculum development), a large part of their work (i.e., teaching) is performed individually. Therefore, for the purpose of this review we define teacher teams as the smallest organizational unit existing of three or more teachers, responsible for delivering one or more educational programs (Wijnia, Kunst, van Woerkom, & Poell, 2016).

Team learning refers to the dynamic and iterative process in which the activities of information acquisition, information processing, and information storage and retrieval, result in shared mental models among team members, enabling the team to improve performance (Van Woerkom & Croon, 2009; Decuyper et al., 2010; Van Offenbeek, 2001). Information acquisition refers to individual teachers scanning and searching their environment to collect new information that is needed to perform their task as a teacher. This information can be acquired using a wide variety of activities: reading books, visiting workshops, participating in formal education, asking feedback from colleagues, or visiting their colleagues' classes (Kwakman, 2003; Van Offenbeek, 2001). Boundary-crossing activities are also part of the information acquisition process. These activities refer to acquisition of information through interaction with individuals outside the environment of a team. This information can for example be obtained via network activities or asking feedback from managers or team members of other teacher teams (Decuyper et al., 2010).

Through information processing, the new information is introduced in the team when teachers share their opinions and perspectives during informal and formal meetings with colleagues (Van den Bossche et al., 2006). Information processing encompasses all interactions among teachers that are of crucial value

for learning: sharing information, providing feedback within a team, having a constructive dialogue or negotiations, and collaborating to create a shared understanding or collective mental model (Van Woerkom & Croon, 2009). Although the information that is shared among team members is not necessarily new in an absolute sense, it is often new information to the team as a whole. Introducing this new information with a good level of detail to at least multiple team members contributes to processing of information within the team (Wilson, Goodman, & Cronin, 2007). Information-processing activities enable the team to develop a shared idea or mental model regarding a specific problem or situation. For teachers, this might be a teaching script (how to teach) or an agreement on changes in the curriculum (what to teach). While discussing, rephrasing and questioning the individual perspectives of team members, the team actively works together to co-construct new knowledge (Van den Bossche et al., 2006). Information storage refers to the storage of newly developed perspectives so that this knowledge can be used over time and loss of information is prevented (Decuyper et al., 2010; Van Offenbeek, 2001). This storage may be physical, in minutes or written agreements, or mental, in shared mental models. The retrieval of information at a later stage supports team members to re-use information and revisit decisions that were made in the past.

3. Method

3.1. Study search and selection process

A literature search was conducted in February 2017 using the following databases: Web of Science, Sciencedirect, ERIC, and PsycINFO. To operationalize the concept of team learning the following search terms were used: "team learning" OR "group learning" OR "collaborative learning" OR "cooperative learning" OR "mutual learning" OR "joint learning" OR "sharing" OR "deconstruction" OR "constructive conflict" OR "boundary crossing" OR "feedback" OR "reflection" OR "shared mental models" OR "organizational learning" OR "team reflexivity" OR "team activity". These search terms were combined with keywords defining teacher teams using AND. Fifteen such keywords were used based on five types of teacher search keys (teacher, instructor, lecturer,

professor, and educator) and three team search terms (e.g., team, group, and collaboration). The search was restricted to peer-reviewed journal articles only. This search resulted in 1436 sources (Web of Science: 63, Sciencedirect: 588, PsycINFO: 41 and ERIC: 744). After removing duplicates, 1348 unique records remained.

Three steps for the selection of articles were performed on each set of results. The first step was the selection based on year of publication. The year 1990 was chosen as the earliest year of interest because, in that year Peter Senge's book the Fifth Discipline was published which functioned as a catalyst for team-learning research (Decuyper et al., 2010; Hannes et al., 2013), resulting in the exclusion of 35 articles. In the second step, titles and abstracts were screened to ensure that teacher teams were the primary unit of research (which was not the case for N=1230). Examples of excluded studies were studies with a primary focus on teacher professional-learning communities, or teams of students. We excluded studies with a focus on professional-learning communities because these communities have a primary focus on learning whereas teacher teams have a primary focus on the organization of work (Vescio, Ross, & Adams, 2008). Moreover, we scanned the resulting abstracts (N = 83) for references to any of the team-learning activities defined. This resulted in exclusion of another 20 records that did not refer to team learning (activities) in the abstract. In the third and final step, the full-texts of the remaining records (N = 63) were checked for having team learning as a focal topic by either naming the holistic concept ("team learning") or specific components (i.e., "constructive conflict") of team learning. Studies that were excluded on the basis of this last selection criterion had for example a focus on implementation of educational innovation, team performance and organizations (e.g., team effectivity and team composition), or team teaching using couples of teachers. This resulted in a total of 20 articles remaining for inclusion in the present literature review. For a graphical overview of the search and selection process, see Figure 5.2.

3.2. Procedure

The selected studies applied a large variety of research methods and conceptualizations of the key concepts in this review (teacher teams and team learning). All variables included in the studies were synthesized by tabulating

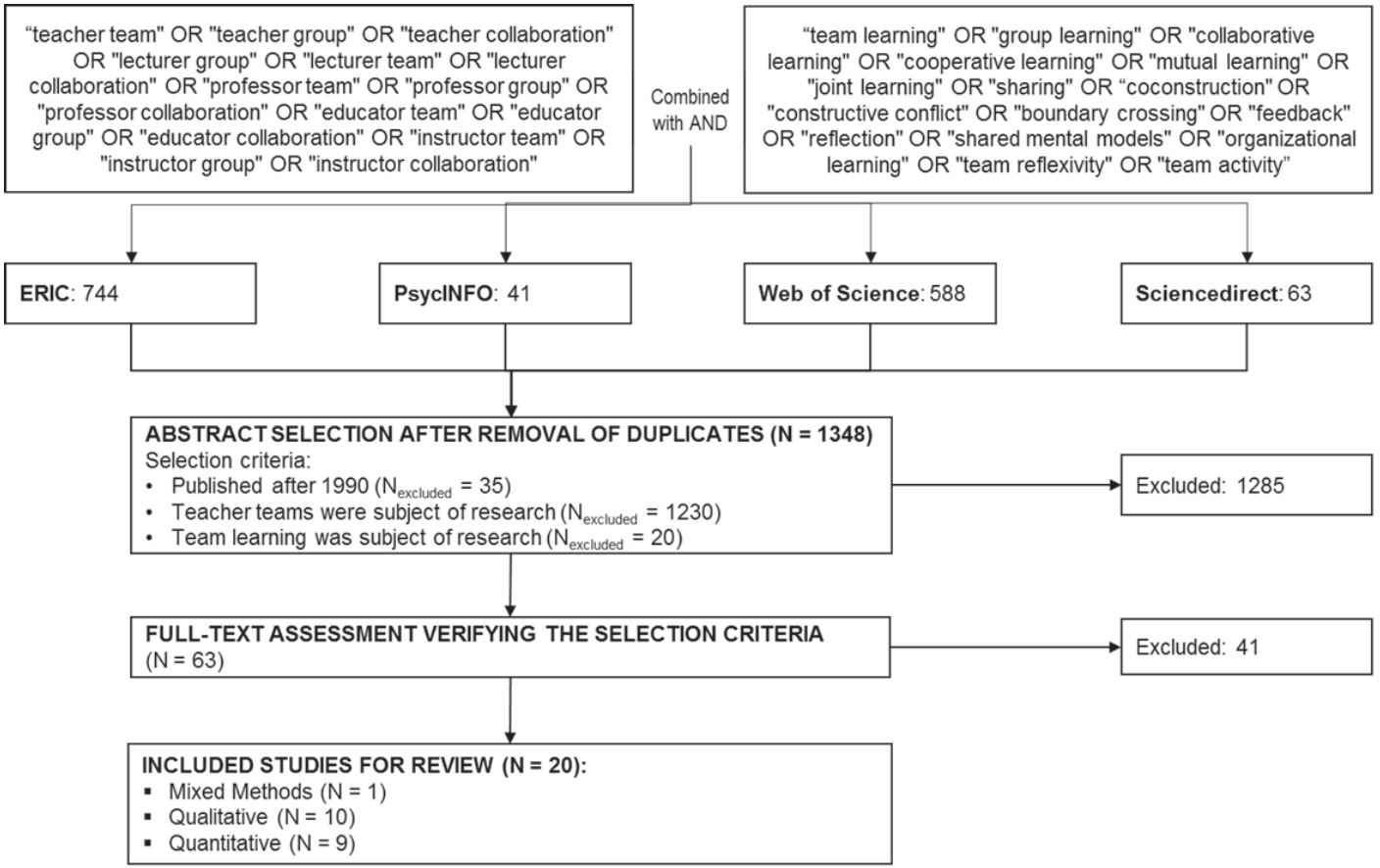

Figure 5.2. - Overview of the Search and Selection Process

extracted results (Petticrew & Roberts, 2006). This resulted in Table 5.1 with article descriptives (type of research design, type of education, number of teams, country) and Table 5.2 and Table 5.3 describing the associated or studied variables (level, type of variable, direction of the association). Following our conceptual framework, the results from the included studies were categorized as either input, output or team-learning process variables on one of the three levels of analysis (individual, team, and school-level).

4. Results

4.1. Descriptives of the included studies

A detailed overview of the 21 selected studies is presented in Table 5.1. One study was conducted before 2000, six studies were conducted between 2000 and 2009, and 15 studies between 2010 and 2017. Seven of the studies were conducted in the Netherlands and four studies were conducted in the United States. Three studies were conducted in Belgium (Flanders), two studies each in Norway and South-Africa, and four countries (Sweden, Japan, Australia, and Israel) were represented with one record. In quantitative studies the number of teams ranged between 46 and 224 teams, qualitative studies included 1 to 6 teams, and the mixed-method study included 7 teams. Qualitative studies that investigated only one team were often conducted within a primary school.

4.2. Individual-level predictors of team learning

Teacher demographics were included only in the study of Bouwmans, Runhaar, Wesselink, and Mulder (2017). In this study, teachers' gender was not found to be associated with team learning while teachers' age was negatively associated with team learning activities (Bouwmans et al., 2017). Moreover, as an individual level variable, team member proactivity was positively associated with team learning in the study of Bouwmans et al. (2017).

Table 5.1 - Descriptives

Authors (Year)	Design	Method	Sample	Type of Education	Country
Bouwmans et al. (2017)	Quantitative	Survey	92 teams	Vocational Education	The Netherlands
Brouwer et al. (2012)	Mixed-Methods	Survey; Observations	7 teams	Secondary education	The Netherlands
Bucic, Robinson, and Ramburuth (2010)	Qualitative	Interviews	3 teams	University	Australia
Doppenberg, Bakx, and den Brok (2012)	Qualitative	Interviews	14 teachers and 7 principals	Primary education	The Netherlands
Doppenberg, den Brok, and Bakx (2012)	Quantitative	Survey	49 schools	Primary education	The Netherlands
Doppenberg, den Brok, and Bakx (2013).	Quantitative	Survey	49 schools	Primary education	The Netherlands
Drach-Zahavy and Somech (2001)	Quantitative	Survey	52 teams	Primary and secondary education	Israel
Havnes (2009)	Qualitative	Observations	2 schools	Secondary education	Norway
Kruse and Louis (1997)	Qualitative	Interviews; Observations; Documents	4 schools	Secondary education	USA
Levine and Marcus (2010)	Qualitative	Interviews; Documents	1 School	Secondary education	USA
Munthe (2003)	Quantitative	Survey	46 schools	Primary education	Norway
Ohlsson (2013)	Qualitative	Interviews; Observations	3 Teams	Primary education & Secondary education	Sweden
Runhaar et al. (2014)	Qualitative	Interviews	3 teams	Vocational education	The Netherlands
Sato and Kleinsasser (2004)	Qualitative	Interviews; Observations; Documents	1 School	Secondary Education	Japan

Table 5.1 - Descriptives (vervolg)

Authors (Year)	Design	Method	Sample	Type of Education	Country
Steyn (2015)	Qualitative	Interviews	1 School	Primary education	South-Africa
Steyn (2016)	Qualitative	Interviews	1 School	Primary education	South-Africa
Somech and Drach-Zahavy (2007)	Quantitative	Survey	224 teams	Junior high schools	USA
Vanblaere (2016)	Quantitative	Survey	48 teams	Primary schools	Belgium (Flanders)
Van Gasse, Vanlommel, Vanhoof, and Van Petegem (2016)	Qualitative	Interviews	6 schools	Secondary schools	Belgium (Flanders)
Vangrieken et al. (2016)	Quantitative	Survey	105 teams	Higher vocational education	Belgium (Flanders)
Wijnia et al. (2016)	Quantitative	Survey	93 teams	Vocational Education	The Netherlands

4.3. Team-level predictors of team learning

Six quantitative studies addressed team-level predictors of team learning (see Table 5.2 for an overview of the results). Brouwer, Brekelmans, Nieuwenhuis, and Simons (2012) found in their qualitative case study that diversity in gender and educational level contributed to shared understanding in teams, whereas diversity in tenure and work experience was not beneficial. In contrast to the study of Brouwer et al. (2012), functional heterogeneity in teams was positively associated with team learning in the quantitative study of Drach-Zahavy and Somech (2001) and in the study of Somech & Drach-Zahavy (2007). In the quantitative studies, team size was not significantly associated with team learning (Wijnia et al., 2016; Bouwmans et al., 2017; Drach-Zahavy & Somech, 2001; Somech, 2008). Two quantitative studies (Drach-Zahavy & Somech, 2001; Somech & Drach-Zahavy, 2007) found a positive relationship between frequency of meetings and team learning in teacher teams.

The relationship of task and goal interdependence with team learning was a recurring subject. Two quantitative studies included task interdependence (Wijnia et al., 2016; Bouwmans et al., 2017). Wijnia et al., (2016) reported a negative association between task interdependence and information storage and retrieval and a non-significant association between task interdependence and information processing. Bouwmans et al. (2017) found a positive association between task interdependence and information processing. Vangrieken et al. (2016) developed the construct of team entitativity referring to the extent to which a team meets the requirements of being a team. Both social team entitativity (e.g., cohesion) and task team entitativity (e.g., common goals and task interdependence) were found to be positively associated with team learning. Furthermore, four qualitative studies investigated the relationship between interdependence (task, goal or a combination) and team learning (Ohlsson, 2013; Runhaar et al., 2014; Sato & Kleinsasser, 2004; Van Gasse et al., 2016). When teachers experienced that they needed to work together to achieve their common goals (goal interdependence), a higher participation in team learning activities was identified in the study of Runhaar et al. (2014). Van Gasse et al. (2016) found that working in a team and discussing teaching practices resulted in higher levels of awareness of teachers regarding the teaching style and methods used by other teachers. Although they represent different constructs, team cohesion (Ohlsson, 2013), team identification (Wijnia et al., 2016); Kruse & Louis, 1997), affective team commitment (Bouwmans et al., 2017), psychological safety (Vangrieken et al., 2016), and positive atmosphere (Kruse & Louis, 1997; Ohlsson, 2013) are all variables associated with the team environment for team learning. In the quantitative studies team learning was found to be positively associated with affective team commitment (Bouwmans et al., 2017), psychological safety (Vangrieken et al., 2016), and collective team identification (Wijnia et al., 2016). These positive associations were confirmed in the qualitative studies. A positive team atmosphere supports team learning by enabling the opportunity for all team members to share their perspectives without being judged by colleagues on their opinions (Kruse & Louis, 1997; Olhsson, 2013). Ohlsson (2013, pp. 306-307) described the association between the team atmosphere and team learning as follows: "A facilitating team atmosphere allows team members to challenge and question habitual views or strategies. It seems to open up the space for emotionally loaded conflicting arguments and critical

feed-back, which tend to serve as negative triggers for team learning processes." However, it seems that an increase in cohesion and in a collective positive team atmosphere does not necessarily guarantee an increase in team learning. In the paper of Kruse and Louis (1997) a critical note was made regarding the collective team identification of team members, suggesting a curvilinear relationship: collective team identification contributes to team learning only until the collective sense of belonging to the team is so strong that groupthink starts to emerge and no room is left for critical reflection on work behavior. Moreover, in a quantitative study of Vangrieken et al., (2016) the extent to which team members trust the abilities of the team to effectively perform a variety of tasks (group potency) was positively associated with team learning.

4.4. School-level predictors of team learning

School characteristics were included in the study of Vanblaere and Devos (2016) as control variables (Table 5.2). The school size and type of student population were not related to teachers' team learning activities; however, the type of school (alternative vs. traditional education) was associated with reflective dialogue in teacher teams (i.e., discussions and conversations regarding the development of a new curriculum). Teacher teams in alternative schools (e.g., "Steiner, Montessori, Dewey, and Freinet"; Vanblaere & Devos, 2016, p. 29) reported higher scores on reflective dialogue compared to teacher teams in traditional schools. One of the explanations the authors gave was that teachers from alternative schools might be more motivated to invest in a common belief regarding the schools instructional methods and therefore participate more frequently in team learning activities. The difference in team learning activities such as discussions with colleagues on instructional practices, lesson planning, and student assessment (referred to as teacher collaboration in elementary and junior-high schools was studied in the study of Munthe (2003). In this study, teachers from elementary schools reported slightly higher levels of collaboration compared to teachers from junior high schools.

The added value of team leadership for team learning was investigated in seven studies (two quantitative and five qualitative studies). Transformational leadership, defined as empowering teachers to invest in team activities and in continuous learning, was found to be positively associated with information

Table 5.2 - Input Associations Found for Quantitative Studies

Level	Variable	First Author (Year)	Association
Individual	Gender	Bouwmans (2017)	ns
	Age	Bouwmans (2017)	-
	Team member pro-activity	Bouwmans (2017)	+
Team	Diversity in educational level	Brouwer (2012)	+
	Diversity in tenure	Brouwer (2012)	-
	Diversity in occupational experience	Brouwer (2012)	-
	Diversity in gender	Brouwer (2012)	+
	Diversity in age	Brouwer (2012)	+ (Mutual engagement; shared repertoire); - (joint enterprise)
	Functional heterogeneity	Somech (2007)	+
	Teams' functional heterogeneity	Drach-Zahavy (2001)	+
	Team size	Drach-Zahavy (2001)	ns
		Somech (2007)	ns
		Wijnia (2016)	ns
		Bouwmans (2017)	ns
	Team member proactivity	Bouwmans (2017)	+
	Social team entitativity	Vangrieken (2016)	+
	Task team entitativity	Vangrieken (2016)	+
	Group potency	Vangrieken (2016)	+
	Psychological safety	Vangrieken (2016)	+
	Affective team commitment	Bouwmans (2017)	**+;** ns (boundary crossing)
	Collective team identification	Wijnia (2016)	+
	Task interdependence	Wijnia (2016)	ns (information processing); - (storage and retrieval)
		Bouwmans (2017)	+

Table 5.2 - Input Associations Found for Quantitative Studies (vervolg)

Level	Variable	First Author (Year)	Association
School	Transformational leadership	Bouwmans (2017)	+
		Vanblaere (2016)	+
	Instructional leadership	Vanblaere (2016)	+
	Participative decision-making	Bouwmans (2017)	+
	Alternative vs. traditional school	Vanblaere (2016)	+
	SES of student population	Vanblaere (2016)	ns
	School size	Vanblaere (2016)	ns

processing (Bouwmans et al., 2017) and team learning (Vanblaere & Devos, 2016). Instructional leadership, a focus on obtaining teaching goals and a high quality of education, was also found to be positively associated with team learning (Vanblaere & Devos, 2016). Bouwmans et al. (2017) also found a positive association between participative decision-making and information processing.

The positive association between leadership and team learning was, in a more detailed way, also recognized in the mixed-method and qualitative studies that included leadership. The studies by Brouwer et al. (2012), Bucic et al. (2010), Havnes (2009) and Ohlsson (2013) found that when team leaders support a constructive discussion by inviting all team members to participate without direct judgment on ideas or opinions, this enhances the interpretation of available knowledge within the teams. Kruse and Louis (1997) found that when a team leader is not directly involved in daily teaching practice and operates at a distance from the team, team learning is strengthened. The distance possibly allows the team leader to take a step back, reflect on the team (learning) processes, monitor team progress and invite individual team members to participate in team discussions. Bucic et al. (2010) found that a combination of transformational and transactional leadership styles stimulated teams to strive for high levels of performance by a combination of procedures, systematic discussions, and individual performance feedback.

Furthermore, the qualitative studies (Brouwer et al., 2012; Havnes, 2009; Kruse & Louis, 1997; Levine & Marcus, 2010; Runhaar et al., 2014; Sato &

Kleinsasser, 2004) provided a more refined insight in team-learning processes in teacher teams. A large number of the qualitative studies used observations of team meetings combined with interviews to deepen the insight into the actual team-learning processes occurring within teacher teams. Six studies discussed team talk within team meetings (Brouwer et al., 2012; Havnes, 2009; Kruse & Louis, 1997; Levine & Marcus, 2010; Runhaar et al., 2014; Sato & Kleinsasser, 2004). In the study of Havnes (2009), the framework of Engeström, Brown, Christopher, and Gregory (1997) was used to identify three levels of interaction: coordination, cooperation, and communication. This study indicated that teacher teams differ in the focus of the conversation and that a dichotomy between coordination versus cooperation and communication was identified in the teams. Teams that demonstrated mainly coordinating behavior demonstrated less team learning because the focus of conversation was on day-to-day practices and allocation of tasks. An explanation for the superficial conversations within coordinating teams could be that teams do not have sufficient time to work together and aim to work fast and efficiently (Brouwer et al., 2012; Runhaar et al., 2014). The studies of Brouwer et al. (2012) and Sato and Kleinsasser (2004) also identified this pattern with some teams having a focus on day-to-day discussions in their meetings, instead of a reflective discourse on teaching scripts, referring to the patterns and habits developed by teachers to approach specific teaching situations.

In contrast to the coordination pattern, teams with a focus on cooperation and communication create the opportunity within team meetings to discuss teaching experiences, teaching scripts, and teaching in general (Brouwer et al., 2012; Havnes, 2009; Kruse & Louis, 1997; Sato & Kleinsasser, 2004). In cooperation and communication oriented teams, the reflective conversations give opportunities for sharing knowledge and constructive conflict.

The structure and aim of the team meetings of teachers can explain the depth of conversation achieved. Levine and Marcus (2010) found that when team meetings are well-structured and have a clear common goal, the within-team communication focuses more on an in-depth discussion of teaching. Moreover, they found that team meetings that were ill-structured or without a specific goal bogged down more easily in coordination of tasks and superficial discussions. A last finding of Levine and Marcus (2010) was that while the team leader can structure the team meetings, external support from outside the team

(such as the principal or a school coach) can contribute to the team-learning process during team meetings as well.

4.5. Outcomes of team learning in teacher teams

4.5.1. Individual-level outcomes

Two quantitative studies related team learning activities to outcomes on the individual teacher level (see Table 5.3). In the study of Munthe (2003) team learning was positively associated with teacher abilities to cope with the uncertainties in their work. Moreover, team learning was positively associated with teacher job satisfaction and negatively associated with role ambiguity (Munthe, 2003). Furthermore, Doppenberg (2013) defined two types of individual-level learning outcomes: individual learning and collegial learning outcomes. Individual learning outcomes were defined as changes in individual knowledge, beliefs or behavior regarding teaching while collegial learning outcomes referred to changes in knowledge and beliefs regarding their colleagues or changes in behavior when collaborating with colleagues, (Doppenberg et al., 2013). Doppenberg et al. (2013) found a positive association between team learning activities such as information sharing, and collectively developing new plans to improve teaching (referred to as joint work) and the individual and collegial learning outcomes of teachers

4.5.2. Team-level outcomes

Three quantitative studies included team performance outcomes (Drach-Zahavy & Somech, 2001; Somech & Drach-Zahavy, 2007; Vangrieken et al., 2016) (see Table 5.3). Team learning was positively associated with team effectiveness in the study of Vangrieken et al. (2016). Moreover, Somech and Drach-Zahavy (2007) found a positive association between exchange of information and team performance. Furthermore, Somech and Drach-Zahavy (2007) and Drach-Zahavy and Somech (2001) found a positive relationship between team learning and team innovativeness. The more a teacher team spends time on information exchange, negotiating and reflection, the higher were their scores on team innovation (Somech & Drach-Zahavy, 2007). However, the type of information exchanged in team meetings and the topics of negotiation within teacher teams were not part of these studies. Therefore, it remains unclear if

Table 5.3 - Output Associations Found for Quantitative Studies

Level	Variable	First Author (Year)	Association
Individual	Individual learning outcomes	Doppenberg (2013)	+ (joint work; collegial support); ns (exchange; intervision)
	Collegial learning outcomes	Doppenberg (2013)	+ (joint work; collegial support); ns (exchange; intervision)
	Teacher certainty	Munthe (2003)	+
	Role ambiguity	Munthe (2003)	-
	Job satisfaction	Munthe (2003)	+
Team	Shared learning outcomes	Doppenberg (2013)	+ (joint work; exchange); ns (intervision; collegial support)
	Team performance	Somech (2007)	+ (exchanging information); ns (learning, motivating, negotiating)
	Team innovation	Drach-Zahavy (2001)	+ (learning); ns (motivating, exchanging information; negotiating)
		Somech (2007)	+
	Team effectiveness	Vangrieken (2016)	+
	Mutually shared cognition	Vangrieken (2016)	+
	Implementation of Competence-based education	Wijnia (2016)	+ (information processing) ; ns (storage and retrieval)
	Disagreement about Competence-based education	Wijnia (2016)	ns

the conversations had a focus on day-to-day teaching practices (coordination interaction pattern) or reflection on teaching practice (cooperation and communication interaction pattern).

Doppenberg et al. (2013) defined one team-level learning outcome: shared learning outcomes. Shared learning outcomes are defined as knowledge,

behavior or beliefs of teachers that are shared among colleagues. Team learning activities were positively associated with shared learning outcomes of teachers. Furthermore, team learning was positively associated with the shared understanding of a task (Vangrieken et al., 2016).

Runhaar et al. (2014) and Wijnia et al. (2016) evaluated the contribution of team learning to a shared understanding of the implementation of competence-based education in the context of Vocational Education and Training. The quantitative study of Wijnia et al. (2016) found that team learning was not associated, but information processing was associated with agreement among teachers about the extent to which competence-based education was implemented. Moreover, the qualitative study of Runhaar et al. (2014) found a mutually reinforcing pattern: On the one hand they found that the more a team participates in team learning activities, the more it gains a shared understanding of competence-based education principles. On the other hand they found that the more a teacher team gains a shared understanding of competence-based education principles, the more it recognizes the team goals and the value of team learning to achieve the team goals. Based on these results, Runhaar et al. (2014) concluded that teacher teams need profound discussions on education to understand why they work together and how collaboration benefits teaching and curriculum development.

5. Discussion

The aim of this study was to synthesize research on the antecedents and outcomes of team learning in teacher teams. After a systematic search, 20 studies were included in the analysis. The results were structured using a conceptual framework differentiating between input, process and output factors according to the IPO framework (Ilgen et al., 2004). Although the number of studies that investigate team learning in teacher teams is low, the field of team-learning research as a whole is rising, as can be seen from the increasing number of articles that were published after 2010. The majority of the studies did not study the concept of team learning as a whole but investigated aspects of team learning such as information acquisition, information processing, and information storage and retrieval. Based on our review one can conclude that there is a relative

lack of research on team learning in teacher teams; hence, fruitful opportunities exist for future research, to which we shall return shortly.

Previous reviews on team learning (Decuyper et al., 2010; Hannes et al., 2013; Timmermans et al., 2012) already identified factors related to team learning but, with exception of Timmermans et al., (2012), who studied team learning in nursing teams, did not take into account its context. The results of the present literature review demonstrate that a specific focus on team learning in teacher teams provides new insights.

First, this review reveals that the depth of conversation reached during teachers' conversations in team meetings is an important condition for team learning in teacher teams. This conclusion is mainly based on qualitative studies in which conversations among teachers during team meetings were observed (Brouwer et al., 2012; Havnes, 2009; Kruse & Louis, 1997; Levine & Marcus, 2010; Runhaar et al., 2014; Sato & Kleinsasser, 2004). The obtained depth of conversation seems to be related to the amount of constructive conflict achieved during conversations (Havnes, 2009). Future research needs to point out to what extent depth of conversation is also a predictor of other aspects of team learning, such as knowledge sharing and co-construction.

Second, this review identifies the team leader as highly influential when it comes to team learning in teacher teams; not only for inspiring teachers by using transformational leadership, but also because team leaders frequently have the lead in forming the agenda (and thereby the structure) of team meetings. Team meetings are important for team learning in teacher teams, because teachers do not meet each other regularly during their daily work and, therefore, team meetings are required to obtain the depth of conversation necessary for team learning to occur (Havnes, 2009). Vanblaere and Devos (2016) underline that team learning in teacher teams is enhanced by empowerment-oriented leadership styles as well as by outcome-focused leadership styles like instructional leadership. Although studies conducted thus far provide only provisional conclusions regarding leadership and team learning, future research may investigate how different types of leaderships are related to different aspects of team learning. We encourage studies that evaluate the relative impact of different leadership styles such as the study of Vanblaere & Devos (2016) on different aspects of the team learning process.

Lastly, even though few studies investigated the impact of team learning

on individual and team outcomes, this review suggests that team learning in teacher teams is associated with individual teacher professional development (Munthe, 2003; Doppenberg et al., 2013). and with higher levels of shared understanding regarding the implementation of educational innovations (Wijnia et al., 2016; Runhaar et al., 2014; Vangrieken et al., 2016).

5.1. Recommendations for future research

5.1.1. Theoretical recommendations for future research

Although research on team learning in teacher teams is in its early stages, it is a promising field of research because teams who demonstrate a higher level of team learning can potentially increase the quality of educational programs and have a beneficial effect on student outcomes. To strengthen research on team learning in teacher teams, the following recommendations can be made for future research.

First, future studies that focus on the structure of team meetings and the depth of conversations obtained are recommended. This review highlights the need for depth of conversation as a crucial factor for increasing team learning in teacher teams. However, it remains unclear what specific tools can be used to help teachers to attain depth of conversation and constructive conflict in their meetings. While not commonly deployed, field experiments could provide more insight in the types of interventions that could support teacher team learning. For example, an instrument such as guided reflection that aims to enhance shared understanding could contribute to more effective constructive conflicts (Gurtner, Tschan, Semmer, & Nägele, 2007).

Second, to investigate to what extent team learning in teacher teams can be an effective instrument for professional development, it would be relevant to study how team learning affects teachers' use of instructional methods and changes in curricula; especially when these outcomes are related to students' satisfaction about the educational program and, for example, student achievement. The two studies in this review that relate team learning to the impact on curricula in terms of shared understanding, focus only on the proximal outcomes of teacher learning (the organization of education); however, they did not yet take into account more distal outcomes such as the impact on student outcomes (Desimone, 2009). When team learning results in an increase

in shared understanding of educational innovations, this might lead to better aligned courses and thereby to higher levels of student satisfaction and student performance. This is a hitherto unexplored field of research and future studies could follow teacher teams and their students for a longer period of time to evaluate the impact of team learning in teacher teams on student outcomes.

The last theoretical recommendation concerns the conceptualizations of team learning. The wide range of definitions of team learning that is currently used makes it difficult to compare the different studies that were included in this review. Whereas some studies investigate aspects of team learning (e.g., knowledge sharing, co-construction, asking for feedback, reflective dialogue) others discuss the whole concept of team learning. A unequivocal use of team learning definitions in research among teacher teams would help increase comparability in future research. Based on this review, we suggest that studies on team learning in teacher teams should include at least the basic team-learning processes (Decuyper et al., 2010; Van den Bossche et al., 2006): knowledge sharing, constructive conflict, and co-construction to obtain a good view on the working mechanisms underlying team learning as a whole.

5.1.2. Methodological recommendations for future research

Based on our review, we can make the following methodological recommendations for future research.

First, a major part of the studies reviewed were based on qualitative data, studying teacher meetings and learning processes in a limited number of teacher teams. These qualitative studies are useful to explore how team learning in teacher teams operates in daily practice. A limitation of this research approach, however, is the low generalizability to other types of schools and teacher teams. Therefore, we recommend to set up new quantitative studies to verify the findings of qualitative studies.

A second recommendation is related to the many different instruments that were used to measure team learning. Many studies used a self-developed scale to capture parts of the team-learning processes. Moreover, most of the scales identified in our review focused on the teaching context specifically. Although these scales might be more recognizable for teachers, the generalizability of the outcomes to other contexts is a problem. Only two measures included the broad team-learning concept and used validated scales for team learning (Van

den Bossche et al., 2006; Van Offenbeek, 2001). The commonly used scale from Edmondson (1999) was not included in any of the studies. For future research we suggest the use of validated scales (i.e., Edmondson, 1999; Van den Bossche et al., 2006; van Offenbeek, 2001) that capture the basic team-learning processes in combination with context-specific predictors, such as instructional leadership, and context-specific outcomes, such as student dropout or implementation of educational innovations.

A third recommendation concerns the types of qualitative instruments and quantitative research designs. In the case of qualitative instruments, the coding schemes and analytical procedures used were often not described. Publishing interview outlines and coding schemes as appendices online would contribute to the transparency of these studies and to opportunities for replication.

5.1.3. Practical recommendations

Based on the results of our review study, teams that want to stimulate team-learning processes would be wise to reflect on the structure and type of their team meetings. It might be useful for these teams to make a distinction between items on the agenda that need superficial coordination (i.e., dividing tasks) and items that have a potential for deep-level learning processes and knowledge exchange (i.e., discussing teaching practices or reflection on the curriculum). Team leaders can play a crucial role in fostering these learning processes by facilitating team discussions and by stimulating all team members to participate without direct judgment of their ideas or opinions.

CHAPTER 6

Team Learning and its Association with the Implementation of Competence-Based Education[5]

ABSTRACT

Competence-based education (CBE) is the leading paradigm for education reform of Vocational Education and Training in European countries. This study addresses the association of collective team identification, task interdependence, team learning, and team size, with the implementation of CBE (N = 1008 teachers, 93 teams). Information processing in teams was positively associated with the implementation of CBE. Furthermore, trends revealed that information storage and retrieval, task interdependence, and smaller team sizes were associated with less disagreement within the team about the CBE-level of the educational program. These results provide further insight into the importance of team learning for education reform.

Keywords: *competence-based education; team learning; teacher teams; team entitativity; vocational education and training.*

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CHAPTER 6

1. Introduction

Competence-based education (CBE) has become the leading paradigm for education reform in the Vocational Education and Training (VET) sector in many European countries (Biemans et al., 2009; Brockmann, Clarke, Méhaut, & Winch, 2008; Sturing, Biemans, Mulder, & de Bruijn, 2011; Wesselink, 2010). CBE is an educational paradigm in which the competences (e.g., skills, knowledge, and attitudes) needed in later professional practice form the basis for curriculum development instead of academic subjects, such as English or mathematics. By taking vocational competences as the starting point for curriculum design, learning becomes more meaningful for students and the transition from school to work is facilitated. It is therefore expected that CBE increases the employability and motivation of students and minimizes student dropout (Biemans et al., 2009).

The transition to CBE has not gone smoothly (Truijen et al., 2013). Because courses in CBE require integration of theory and practice and of different subjects, teachers specialized in different disciplines need to take part in interdisciplinary teacher teams that are collectively responsible for enabling students to acquire the required competences (Wesselink, 2010). These competences are not exclusively focused on technical skills or knowledge, but also include communication or language skills that are needed to function successfully within society and the future profession. This implies that more general subjects such as (foreign) languages need to be adapted to a vocational-specific context so that students learn to communicate adequately within the context of a selected occupation and hence this requires that teachers from different disciplines work together to implement and deliver the educational program. However, because traditionally teaching is often approached as an isolated task instead of a team responsibility, teacher teams are not easily implemented (Gajda & Koliba, 2008).

In addition to taking vocational competences as the starting point of curriculum development, in CBE students are encouraged to take responsibility for their own learning process, such as determining own study pace (Van der Sanden, De Bruijn, & Mulder, 2003; Wesselink, Van den Elsen, Biemans, &

Mulder, 2007). Teaching roles therefore become more complex as teachers need to take on the role of coach instead of solely focusing on knowledge transmission. Previous research has demonstrated that teachers often struggle to get their daily teaching practice in line with the curricular changes of CBE (e.g., Misbah, Gulikers, Maulana, & Mulder, 2015).

Nevertheless, working in teacher teams might promote the successful transition toward CBE. For example, collaboration among teachers has been positively associated with adopting student-centered teaching strategies and students' achievement (for a review see Vangrieken, et al., 2015). However to facilitate the implementation of CBE, simply forming teacher teams might not be enough. Within the team, teachers need to engage in team learning activities, such as sharing and discussing their expertise and pedagogical views on teaching and the educational program (Havnes, 2009; Meirink, Imants, Meijer, & Verloop, 2010). The level of team learning that can be achieved, is likely to be determined by the extent to which teacher teams are able to operate as a team, such as their level of task interdependence, identification with the team (Vangrieken, Dochy, Raes, & Kyndt, 2015), and team size (Rentsch & Klimoski, 2001).

In the current study we investigate how task interdependence, collective team identification, and team size are associated with participation in team learning activities, and how this in turn affects the implementation level of CBE in educational programs. Before presenting the design and results of the present study, we first describe the role of CBE in general and in the context of VET in the Netherlands. Second, we discuss team learning and how it might be associated with the implementation of CBE in educational programs. Finally, we explain how task interdependence, collective team identification, and team size might affect team learning and subsequently the implementation of CBE.

2. Competence-based education in the Netherlands

2.1. Competence-Based Education

Competences are seen as integrated performance-oriented capabilities that include the knowledge, skills, and attitudes that are required for the performance of a task (Mulder, 2001). Wesselink and colleagues (2007, 2010) developed a framework to determine the extent to which educational programs are designed according to CBE principles. This framework was further tested and refined by Sturing et al. (2011). Within this framework, CBE is characterized by four content and six instructional features. Content principles of CBE state that (1) vocational core problems should be the organizing unit for the (re)design of the educational program and that (2) the competences for the study program should be defined. In addition, it is stressed that (3) knowledge, skills, and attitudes should be integrated in the learning process and assessment. Moreover, (4) in CBE a basis for a lifelong learning attitude needs to be realized not only by focusing on competences needed for job performance, but also by paying attention to acquiring career and citizenship competences and communication and learning skills.

The instructional principles describe *how* CBE should be implemented. Specifically, instructional principles emphasize (1) the role of regular assessment (i.e., before, during, and after the learning process), (2) learning in different authentic situations, offering students opportunities for (3) self-reflection, and (4) self-directed learning. Moreover, instructional principles include (5) the adjustment of guidance to students' learning needs. To this end, teachers need to be able to fulfill the roles of both expert and coach. Finally, (6) the flexibility of the educational program is included in the CBE framework. Flexibility refers to the opportunity for students to perform learning activities at their own pace and alter the program for their specific needs.

Many European countries have implemented CBE in their VET sector (Mulder, Weigel, & Collins, 2007) as it is believed that CBE will help to bridge the gap between the labor market and education (Biemans et al., 2009). Moreover, CBE principles are aligned with European education policies that advocate that

students do not only need to obtain domain-specific knowledge and skills, but also need to be prepared for lifelong learning given the fact that the knowledge and skill required to do their jobs evolve as a function of today's fast changing environments (European Commission, 2001; Organisation for Economic Co-Operation and Development, 2013). For these reasons, the Dutch government (n.d.) requires all VET institutes to adopt a competence-based qualification structure. Nevertheless, as yet it is unclear whether CBE can fulfill its goals in terms of reduced dropout, increased motivation, and development of lifelong learning skills and the usefulness of CBE has been debated (e.g., Hirtt, 2009).

2.2. The Dutch Context

In the Dutch educational system two routes can be identified after primary education that lead to either university or a job: the general education and vocational education route. The vocational educational route consists of preparatory secondary vocational education (4 years, age 12-16 years) and senior secondary vocational education (1-4 years; age 16 years and older; see Wesselink et al., 2007). In the current study we focus on the senior secondary vocational education sector (MBO in Dutch).

Since August 2012, all Dutch senior secondary VET institutes have adopted a competence-based qualification structure (Dutch government, n. d.). Each profession has its own qualification structure that is similar for all VET institutes that offer training in that profession. The competence-based qualification structure for VET educational programs are developed by knowledge centers that aim to improve the quality of vocational education by establishing connections between education and professional practice.

VET institutes use the qualification structures to organize and design their curricula. Although all senior secondary VET institutes in the Netherlands have to adopt the competence-based qualification structure, in practice teacher teams have autonomy in *how* these competences are taught. Therefore, teacher teams differ in the extent to which they implement CBE principles in their curricula (Sturing et al., 2011; Wesselink, 2010; Wesselink et al., 2007).

3. Team learning in teacher teams

In general, a team can best be defined as three or more individuals who are interdependent in their tasks and share responsibility for the outcomes (Cohen & Bailey, 1997; Kozlowski & Ilgen, 2006). Teams see themselves and are seen by others as a social entity embedded in a larger social system (e.g., VET institute), with connections to a broader system context (e.g., government) and task environment that drive team task demands. In the current study, teacher teams are defined as consisting of at least three teachers who are collectively responsible for the design and delivery of the same educational program in a VET institute.

Participation in team learning activities is assumed to affect the implementation of CBE (Runhaar et al., 2014). For example, assessment of core competences in authentic contexts has proven to be difficult (Gulikers, Baartman, & Biemans, 2010) and teachers might experience difficulties in developing competence-based assessment procedures. Interaction between team members might facilitate the transfer of knowledge and skills from one team member to another (Van den Bossche et al., 2006), supporting the implementation of CBE. Team learning can be described as a dynamic process of action and reflection characterized by activities such as the acquisition, processing, and storage and retrieval of information (Decuyper et al., 2010; Edmondson, 1999; Van Offenbeek, 2001). It consists of learning activities conducted by individual team members (i.e., information acquisition and boundary crossing) and collective team learning activities (i.e., information processing and storage and retrieval).

For teacher teams to learn, individual teachers need to gather new information and insights. This can be achieved through *information acquisition* and *boundary crossing* (Decuyper et al., 2010; Van Offenbeek, 2001). Information is acquired through participation in professional development activities, reading relevant materials, or by asking team members for feedback (Van Offenbeek, 2001). Boundary crossing can best be seen as a type of distal learning, in which team members seek feedback from experts or teachers outside their teams (Kasl, Marsick, & Dechant, 2000; Wong, 2004). Despite the fact that information acquisition and boundary crossing are distinct constructs, it is likely that they are related as both are concerned with gathering new information and feedback by individual team members.

The information that is gathered by individual teachers needs to be distributed to and discussed with other team members. Therefore, it is important to look at collective team learning activities, such as the interaction and discourse patterns in teams (Decuyper et al., 2010; Van den Bossche et al., 2006; Van Offenbeek, 2001). *Information processing* refers to the process of distributing new information to other team members and collaboratively coming to a shared interpretation of this information through negotiation and discussion (van Woerkom & Croon, 2009; van Woerkom & van Engen, 2009). The shared interpretation of information needs to be stored for future reference (Decuyper et al., 2010; Van Offenbeek, 2001). *Storage and retrieval* concerns the process of storing and re-using shared information, reached consensus, plans, and procedures, which leads to the persistence of team learning over time (Decuyper et al., 2010). Through storage and retrieval, the knowledge that results from team learning processes is saved for later inspection and information loss is prevented.

In a multiple case study of three VET teams, Runhaar et al. (2014) demonstrated that engagement in team learning activities facilitated a shared understanding of the principles of CBE. Although a shared understanding of the CBE principles among team members is believed to facilitate the implementation of CBE (Gulikers et al., 2010), it is as yet unknown whether team learning is associated with the perceived level of CBE and whether team members are in agreement about the level of CBE in their educational program.

3.1. Team Learning and the Implementation of CBE

Team learning enables organizations and teams to cope with continuous changes in the environment and team tasks (Edmondson, 1999; Zaccaro, Ely, & Shuffler, 2008). Moreover, empirical evidence has demonstrated that team learning activities are associated with the implementation of technological innovations in hospitals (Edmondson, Bohmer, & Pisano, 2001). As CBE requires different teaching roles from teachers, team learning might be relevant in this context as well. There are reasons to assume that team learning might also be related to the implementation of education reforms, such as CBE. For example, it is assumed that information sharing (Meirink et al., 2010) and participation in professional development activities (van Woerkom & Sanders,

2010) can help teachers in adopting changes in their teaching practices, implying that information acquisition and information processing are important for the implementation of CBE. In addition, Koenen, Dochy, and Berghmans (2015) indicated that institutes implementing CBE could learn a lot from the experiences of other institutes, suggesting that boundary crossing could be beneficial for the implementation of CBE. Moreover, information storage and retrieval can be important in the context of education reform: Recording the team's views and procedures concerning CBE might be important for the implementation process as it contributes to the persistence of team learning (Decuyper et al., 2010).

Although information acquisition, boundary crossing, information processing, and storage and retrieval all seem important for the implementation of CBE, some learning activities might be more important than others. Previous research demonstrated that information processing was an explanatory variable for predicting innovativeness at the team level, whereas information acquisition and storage and retrieval were unrelated to team members' and managers' ratings of innovativeness (van Woerkom & Croon, 2009). Information processing might be the most important team learning activity in the context of education reform. As CBE requires integration of different academic subjects, teachers specialized in different disciplines need to work together to (re) design the curriculum. Therefore, sharing and coming to a shared interpretation of information is key in the successful implementation of CBE (Wesselink, Dekker-Groen, Biemans, & Mulder, 2010).

3.1.1. Learning and Within-Team Disagreement

In addition to examining effects of team learning on the implementation of CBE in educational programs, it is also important to investigate differences in team members' perceptions regarding the implementation of CBE. Although CBE aims to promote students' motivation and employability (Biemans et al., 2009), within-team disagreement about the implementation level of CBE might influence the effectiveness of CBE because it might result in educational programs in which CBE is not consistently implemented. Stroet, Opdenakker, and Minnaert (2013), for example, demonstrated that prevocational education schools with a mixed educational philosophy were less effective in terms of student motivation than more "traditional" or "innovative" schools (e.g., schools

that emphasized self-directed learning skills, student responsibility, and learning in authentic contexts).

Collective team learning processes, such as information processing and storage and retrieval, are likely to contribute to a shared view of the educational program. Previous research indicated that information processing in teams was associated with achieving a shared understanding (Van den Bossche et al., 2006; Van den Bossche, Gijselaers, Segers, Woltjer, & Kirschner, 2011). By sharing viewpoints and negotiating alternative ideas by argument and clarification, a teacher team can work toward a shared meaning and interpretation of the educational program. To achieve agreement about the current implementation level of CBE, it is important that information about the team's policy regarding CBE is not only stored, but also accessible to and used by all team members. The existence of a team policy might facilitate the implementation of CBE, if all teachers are aware and have access to it (cf. Struyven & De Meyst, 2010).

3.2. Antecedents of Team Learning and Within-Team Disagreement

In addition to team learning, it is important to examine antecedents of team learning as well because these might indirectly affect the redesign of education. Factors such as team size, task interdependence, and collective team identification have been associated with team learning and the effectiveness of teams (Truijen et al., 2013; Vangrieken et al., 2015).

3.3. Team Size

We hypothesize that team size is negatively associated with achieving within-team agreement about current implementation levels of CBE. Rentsch and Klimoski (2001) argued that because larger teams have more linkages amongst team members, it is more difficult for individual members to interact with each other member. In support of this view, Rentsch and Klimoski demonstrated that larger teams had a lower likelihood of achieving shared mental models than smaller teams. In addition, when size increases a team will eventually reach a point at which it fragments into sub-teams (Kenna & Berche, 2011), making it more difficult to achieve agreement.

Moreover, information processing and storage and retrieval require sufficient

opportunities for interaction among team members. Previous research indicated that teachers of interdisciplinary teams express a preference for smaller team sizes (i.e., 5 to 6 members) rather than larger teams (i.e., 10 or more members), because this makes the planning and coordination of activities less complex (Crow & Pounder, 2000). However, studies that investigated the effect of team size on team learning failed to find a significant association (Deeter-Schmelz & Ramsey, 2003; Van Der Vegt & Bunderson, 2005). Nevertheless, the potential negative effect of larger team sizes on team learning, and the implementation of CBE in educational programs is investigated in our study.

3.4. Task Interdependence and Collective Team Identification

It is further expected that task interdependence and collective team identification can have direct or indirect effects on within-team agreement and the implementation of CBE. The level of task interdependence and identification with the team are important indicators of team entitativity or the "teamness" of a team (Vangrieken et al., 2015; Wageman, Hackman, & Lehman, 2005). Team entitativity refers to the extent to which groups actually behave as a team (Campbell, 1958) and is likely to affect the depth and focus of collaboration in teams (Vangrieken et al., 2015). In addition, interdependence and collective team identification have been associated with innovativeness in manufacturing firms (Glynn, Kazanjian, & Drazin, 2010).

Task interdependence refers to the extent to which successful completion of tasks requires interaction and coordination of team members (Van Der Vegt, Emans, & Van De Vliert, 1998). We expect that task interdependence is important in the context of education reform. In CBE, teacher teams are collectively responsible for helping students acquire the vocational competences (Wesselink et al., 2010), which means that teachers need to share information and expertise with one another to facilitate the successful delivery of the educational program. We therefore expect that task interdependence is associated with collective team learning behaviors such as information processing and storage and retrieval and within-team agreement about the current level of CBE implementation (Van den Bossche et al., 2006; Van der Vegt & Janssen, 2003).

Collective team identification is another antecedent of team learning behaviors (Edmondson, Dillon, & Roloff, 2007) and refers to the emotional

significance individual members attach to their team membership (Van Der Vegt & Bunderson, 2005). If teachers identify themselves with their teams, they are more committed to the team and more cohesive (Edmondson et al., 2007; Yukl, 1998). Cohesiveness in teams has been associated with openness for different opinions and perspectives and team learning behaviors, such as knowledge-sharing among team members (van Woerkom & Sanders, 2010). Collective team identification might be especially important for interdisciplinary teacher teams in VET. According to Edmondson et al. (2007), teams with high levels of collective team identification will be better able to capture the benefits of the diversity of team members for learning in interdisciplinary teams. For example, Van der Vegt and Bunderson (2005) demonstrated that multidisciplinary teams with stronger collective team identification were better able to use their expertise diversity for team learning and performance. Therefore, it is assumed that when team members attach value to their membership they are more likely to share and discuss their views, store and re-use agreed consensus, and have similar views about the implementation level of CBE in the current educational program.

4. Present study and hypotheses

The current study aims to examine the relationship between team learning, collective team identification, and task interdependence and the implementation of CBE. Figure 6.1 depicts the conceptual model. In this model we are mainly interested in team-level associations, controlled for the individual level relationships, because we want to gain more insight into the effective characteristics of teacher teams in VET.

We expect that the team learning activities of information acquisition, boundary crossing, information processing, and storage and retrieval facilitate the implementation of CBE (Hypothesis 1a-1d; cf. Edmondson et al., 2001; Haves, 2009). In addition, we expect that team size and perceptions of collective team identification and task interdependence have indirect effects on the implementation of CBE through their effect on team learning. We suppose team size to be negatively related to collective team learning activities (Hypothesis 2; cf. Crow & Pounder, 2000). We hypothesize that task interdependence and collective

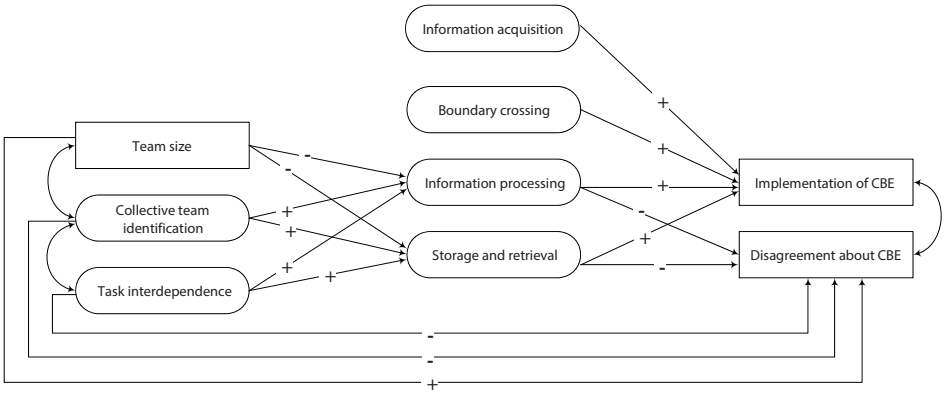

Figure 6.1. - Conceptual model and hypothesized associations at the team level. CBE = Competence-based education.

team identification will be positively associated with collective team learning activities, such as information processing and storage and retrieval (Hypothesis 3 and 4; Van der Vegt & Bunderson, 2005; Van der Vegt & Janssen, 2003).

With respect to the within-team disagreement about the level of CBE implementation in the current program, we expect that information processing and storage and retrieval will be associated with lower levels of disagreement (Hypothesis 5a and 5b; cf. Van den Bossche et al., 2006, 2011). Moreover, we expect larger teams to have higher levels of disagreement (Hypothesis 6; Rentsch & Klimoski, 2001). Finally, we hypothesize that teams with lower levels of collective team identification and task interdependence will show a higher disagreement (Hypothesis 7 and 8).

5. Method

5.1. Participants

Data were collected as part of a study on teacher teams in VET from April to December 2014. The survey was sent out to 1650 teachers divided over 104 teams from 23 VET institutes in the Netherlands. Respondents from 11 teams were excluded from data analysis, because only one teacher filled out the

questionnaire completely or because the required minimum response rate of 30% was not met (van Mierlo, Vermunt, & Rutte, 2008).

The remaining sample consisted of 1008 (61.09%) teachers from 93 teams and 22 different VET institutes. Because not all teachers completed all measures, sample size can differ for each variable. Teachers had an average age of 47.29 years (SD = 11.14), 48.41% male. Average age and the percentage of males/females is representative for VET teachers in the Netherlands (i.e., 46.90 years old, approximately 50% male; Lubberman, Langejans, & Kemper, 2011). Teachers had an average teaching experience of 14.37 (SD = 10.66) years and had been member of their current team for on average 6.55 (SD = 6.62) years. 72.72% of the teachers indicated to have had a previous career outside of the educational sector. Team size of the participating teams ranged from 3 to 42 participants (M = 21.61, SD = 9.83). Response rates per team varied from 31% to 100%.

In the Netherlands, VET study programs are offered in four different sectors. Twenty-eight teams (n = 374) were responsible for educational programs in the services and health care sector and 24 teams (n = 262) in the technology sector. The commerce and administration sector was represented by 23 teams (n = 252) and the agricultural sector by 13 teams (n = 72). Five teams (n = 48) were mixed, indicating they were responsible for educational programs that were part of multiple sectors. Team size varied per sector, $F(4, 1003) = 39.83$, $p < .001$ $\eta_p^2 = .14$. Teacher teams in the health care sector (M = 24.92, SD = 10.17) were significantly larger than the teams in all other sectors, whereas teams in the agricultural sector were significantly smaller than the teams in other sectors (M = 10.92, SD = 5.74). Teacher teams in the technology sector (M = 21.32, SD = 8.95), the commerce and administration sector (M = 20.88, SD = 9.28), and the mixed teams (M = 17.35, SD = 3.53) did not differ in team size from one another.

5.2. Measures and Procedure

All teachers received an e-mail with a personalized link to the online questionnaire. The questionnaire was part of a larger study on teacher teams in VET. For this study, only data concerning team learning, task interdependence, collective team identification, and CBE were analyzed.

5.2.1. Competence-based education (CBE) scale

The CBE scale consisted of 13 items ranging from 1 (*never*) to 5 (*always*) based on the framework by Wesselink et al. (2007, 2010) and Sturing et al. (2011). Items are reported in Table 6.1. Teachers had to indicate to what extent the educational program their team is responsible for was designed according to the CBE principles (*In the educational program my team is responsible for…).* Items were discussed with two external experts on CBE. A preliminary version of the questionnaire was pilot-tested in February 2014 with 94 teachers from one VET institute. These teachers did not participate in the main study. Principal axis factoring with direct oblimin rotation and a follow-up parallel analysis resulted in one interpretable factor explaining 46.55% of the variance. Factor loading ranged from .57 to .82. Reliability analysis resulted in a Cronbach's alpha of .91.

In the current sample, the psychometric properties of the scale were investigated with a multilevel confirmatory factor analyses (ML-CFA) with robust maximum likelihood (MLR) estimation in Mplus 7.2 (Muthén & Muthén, 1998-2015). Assessment of model fit was based on multiple fit indices. Root-mean-square error of approximation (RMSEA; Steiger, 1990) and standardized root-mean-square residual (SRMR) values of .08 or lower can be considered acceptable (Byrne, 2012). The comparative fit index (CFI; Bentler, 1990) and Tucker–Lewis index (TLI; Tucker & Lewis, 1973) should have values greater than .95 (Kline, 2005), although values above .90 are considered acceptable (Bentler, 1990). In addition, Akaike's information criterion (AIC) and Bayesian information criterion (BIC) are reported, with lower values indicating better fit.

Table 6.1 shows that skewness and kurtosis values were in the normal range, indicating responses were approximately normally distributed (Byrne, 2012). First a single-level CFA with maximum likelihood estimation was conducted (see Byrne, 2012). The fit of the single-level CFA was not optimal (see Model 1, Table 6.2). Modification indices indicated that the fit of the model would be improved when the residual covariance between items 6 and 7 would be included (MI = 127.49, EPC = 0.16). Because items 6 and 7 show considerable overlap in wording (see Table 6.1) we decided to incorporate the residual covariance between these items in the model (Byrne, 2012). Inclusion of the residual covariance resulted in a significant improvement of model fit (see Model 2, Table 6.2).

Table 6.1 - Items and Descriptive Statistics for the Competence-Based Education Scale

Items *(In the educational program my team is responsible for…)*						**Factor loadings final model**	
		M	*SD*	**Skew-ness**	**Kurtosis**	**Level 1**	**Level 2**
1.	Learning activities take place in different, concrete, meaningful vocational situations.	3.49	0.83	-0.28	-0.23	.60***	.77***
2.	The study program is structured in such a way that the students increasingly self-direct their learning.	3.26	0.90	-0.17	-0.40	.63***	.82***
3.	The guidance is adjusted to the learning needs of the student.	3.33	0.87	-0.21	-0.45	.71***	.81***
4.	Attention is paid to the development of citizenship competences.	3.51	0.86	-0.17	-0.43	.69***	.67**
5.	Assessment takes place in vocational settings.	3.62	1.04	-0.44	-0.45	.52***	.61***
6.	Knowledge, skills, and attitudes are integrated during instruction	3.58	0.88	-0.27	-0.33	.72***	.98***
7.	Knowledge, skills, and attitudes are integrated during assessment	3.35	0.91	-0.09	-0.57	.63***	.97***
8.	Attention is paid to lifelong learning of students.	3.02	0.96	-0.01	-0.46	.66***	.98***
9.	Education is based on core tasks, working processes and competences from the qualification profile.	4.10	0.85	-0.68	-0.02	.56***	.90***
10.	The program can be adapted to the needs of the student.	2.93	0.97	0.31	-0.68	.54***	.56*
11.	Attention is paid to the career development of the students.[a]	3.51	0.90	-0.17	-0.53	-	-

Table 6.1 - Items and Descriptive Statistics for the Competence-Based Education Scale (vervolg)

Items *(In the educational program my team is responsible for…)*						**Factor loadings final model**	
		M	*SD*	**Skew-ness**	**Kurtosis**	**Level 1**	**Level 2**
12.	Complex vocational core problems are central.	3.30	0.87	-0.08	-0.45	.68***	.82***
13.	Students are challenged to reflect on their own learning.	3.44	0.94	-0.17	-0.55	.72***	.55*

Note.

N = 921. Response scale ranged from 1 to 5. [a] Item 11 was not included in the final model.

*$p < .05$, **$p < .01$, ***$p < .001$.

Subsequently, the CBE scale was analyzed with a ML-CFA to test the structure on the teacher (Level 1) and team level (Level 2) with factor loadings freely estimated across levels. Average cluster size was 9.90. An error message indicated that item six had a negative residual variance. Because the residual variance was small and non-significant we constrained it to zero in the between model (Muthén, 2006). Overall, fit indices indicated the model had a reasonable fit to the data (see Model 3, Table 6.2), with exception of the SRMR value at the team level. In ML-CFA it is not uncommon to find lower SRMR-between values than SRMR-within values due to the smaller sample size for Level 2 when compared to Level 1 (Heck & Thomas, 2015).

Finally, we tested for measurement invariance across the two levels by constraining the loadings to be equal across Levels 1 and 2 (see Model 4, Table 6.2). If measurement invariance is achieved this indicates that the factorial structure of the scale is similar across teams. Comparison of the constrained model with the freely estimated model indicated the factor loadings were not completely invariant across levels. Follow up tests indicated only item 11 was non-invariant across levels ($p = .003$), indicating item 11 might be differently interpreted across teams.

We therefore retested the models without item 11. Both the single-level CFA (see Model 5, Table 6.2) and ML-CFA (Model 6, Table 6.2) with 12 items and

Table 6.2 - Fit Indices of the (Multilevel) Confirmatory Factor Analyses of the CBE scale

Single level CFA ($k = 13$)	χ^2	*df*	CFI	TLI	RMSEA	SRMR	SRMR-B	AIC	BIC	$\Delta\chi^2$	Δdf
Model 1	544.60***	65	.91	.89	.09	.04	-	27002.34	27190.54	-	-
Model 2 (residual covariance items 6-7 added)	418.92***	64	.93	.92	.08	.04		26878.67	27071.69	125.68***	1
Multilevel CFA ($k = 13$)							-				
Model 3 (loadings freely estimated[a])	511.27***	130	.92	.91	.06	.04	.18	26600.10	26913.76	-	-
Model 4 (equal loadings[a])	530.15***	142	.92	.91	.05	.04	.14	26617.58	26873.33	28.67**	12
Single level CFA ($k = 12$)											
Model 5 (item 11 removed)	317.14***	53	.94	.93	.07	.04	-	24941.69	25120.23	-	-
Multilevel CFA ($k = 12$)											
Model 6 (loadings freely estimated)	432.19***	107	.93	.91	.06	.04	.13	24690.14	24984.50	-	-
Model 7 (equal loadings[b])	415.02***	119	.93	.93	.05	.04	.12	24683.74	24920.19	10.85	12

Note.
CFA = confirmatory factor analysis; CFI = comparative fit index;
TLI = Tucker-Lewis Index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual;
B = between; AIC = Akaike's information criterion; BIC = Bayesian information criterion.
$N = 921$ teachers, $n = 93$ teams.
[a] Residual variance of item 6 constrained to 0. [b] Residual variance of item 8 constrained to 0.
$^{**}p < .01$, $^{***}p < .001$.

the inclusion of a residual covariance between items 6 and 7 on the within level resulted in an acceptable fit. In addition, the test of the equality of factor loadings (see Model 7, Table 6.2) indicated that invariance across levels was achieved. Table 6.1 displays the standardized factor loadings for Model 6. All factor loadings at Levels 1 and 2 were significantly different from zero. The finale scale, therefore consists of 12 items (Cronbach's α = .90).

5.2.2. Disagreement about CBE

Within-team disagreement concerning the implementation level of CBE in the educational programs was measured with the average standard deviation per team of the CBE scale. The average standard deviation can be used as a dispersion measure indicating the separation in team members' perceptions of the level of CBE of the education program (e.g., Harrison & Klein, 2007). Because teacher teams had varying team sizes, the unbiased standard deviation was calculated (see Biemann & Kearney, 2010; Cureton, 1968).

5.2.3. Team learning

Team learning was measured using a 24-item questionnaire consisting of 4 subscales: information acquisition, boundary crossing, information processing, and storage and retrieval (see Appendix B). All items were scored on a Likert-type scale from 1 (*never*) to 5 (*always*). Information acquisition and boundary crossing refer to individual team learning activities. Information acquisition (5 items; Van Offenbeek, 2001) measures the extent to which team members acquire and interpret information. The subscale resulted in a Cronbach's alpha of .66. The process in which individual team members gather feedback and ideas from people external to their team is measured with the subscale boundary crossing (4 items; Cronbach's alpha = .79; Wong, 2004).

Information processing and storage and retrieval both refer to collective team learning activities. The information processing subscale consisted of a 10 items and was based on the scales developed by Van Offenbeek (2001) and Van den Bossche et al. (2006) and refers to team learning activities such as distributing new information to other team members and collaboratively coming to a shared interpretation of this information through negotiation and discussion (Cronbach's alpha = .91). Finally, storage and retrieval (5 items, Van Offenbeek, 2001) refers to the process whereby teams store shared information,

plans, ideas, and procedures. The subscale resulted in a Cronbach's alpha of .83. A four-factor confirmatory factor analysis resulted in an acceptable fit, $\chi^2(246, N = 1008) = 1221.63$, $p < .001$, CFI = .91; TLI = .90; RMSEA = .06; SRMR = .05.

5.2.4. Task interdependence

Task interdependence was measured with three items by Van der Vegt (2008). Responses were rated on a Likert-type scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). The 3-item scale resulted in a low reliability (Cronbach's alpha = .59). Item statistics indicated the reliability of the scale improved (Cronbach's alpha = .70) when one of the items was dropped ("In our team there is little need for collaboration, team members perform their task independently without help from others"). Therefore, task interdependence was measured with two items ("In our team, team members are dependent on each other to perform their tasks properly" and "The members of this team have to exchange information and advice in order to do their work properly").

5.2.5. Collective team identification

Collective team identification was measured with a scale from Van der Vegt and Bunderson (2005). The scale consisted of four items ranging from 1 (*completely disagree*) to 5 (*completely agree*). An example item of the scale was "I feel a strong sense of belonging to this team.". The scale had an adequate reliability (Cronbach's alpha = .81).

5.3. Analyses

First, ICC(1), ICC(2), and within-group agreement were calculated to examine whether a team-level construct could be calculated for the CBE-scale. ICC(1) represents the amount of individual-level variance that can be explained by team membership, whereas ICC(2) concerns the reliability of the group mean (Bliese, 2000). ICC(1) values below .10 indicate that the group level does not account for much of the variance, whereas values above .20 are considered to be sufficient to justify aggregation (Molleman, 2005). ICC(2) values are often interpreted as reliability score and should be preferably around .80 (Van Mierlo et al., 2009), although values of .60 have been reported as acceptable (e.g., Glick, 1985). Within-group agreement is calculated using the $r^*_{WG}(J)$. Values above .70 are often interpreted as indicating strong agreement (LeBreton & Senter, 2008).

ICC(1) and ICC(2) values were also calculated for the team learning constructs, task interdependence, and collective team identification to examine the amount of variance that could be attributed to the team and teacher level. Subsequently, the conceptual model presented in Figure 6.1, was analyzed in Mplus with a multilevel structural equation model (MSEM) with the MLR estimator.

6. Results

6.1. Interrater Agreement, ICCs, and Correlations for Team Variables

On average, teachers judged the implementation level of CBE in their educational program as scoring 3.41 (SD = 0.62) on a 5-point scale. First, we calculated ICC(1), ICC(2), and $r^*_{WG}(J)$ values to investigate whether a team score of CBE could be calculated and to get insight in the within-team agreement. The CBE scale resulted in an ICC(1) of .13 and ICC(2) of .60, $F(92, 828) = 2.50$, $p < .001$. The ICC(1) value suggests sufficient between-team variance to warrant multilevel analysis (Hox, 2010), and the ICC(2) value can be considered acceptable (e.g., Glick, 1985). Therefore, a team-level construct of CBE implementation is calculated. Finally, a moderate level of within-group agreement was found, $r^*_{WG}(J) = .64$ (SD = .12, range -.01 - .85; see LeBreton & Senter, 2008). We examined whether team characteristics, such as team size, team age, VET sector, gender diversity, and diversity in teams concerning previous working experience (i.e., previous working experience outside or inside the educational sector) were associated with within-group agreement. Three small, but significant, correlations were found: Teams in the technology sector had lower within-group agreement (r = -.24, p = .019), whereas teams in the agricultural sector had higher within-group agreement (r = .21, p = .048) when compared to the other sectors. Moreover, teams that were more diverse with respect to team members having experience outside the educational sector had higher within-group agreement scores (r = .24, p = .019). Overall, the range in within-group agreement scores suggest that some teams agree more than others about the current educational program and that the calculation of a within-team disagreement score is justified.

Team learning activities, task interdependence, and collective team identification

Table 6.3 - Means, SDs, and ICCs of Task Interdependence, Collective Team Identification, and Team Learning

	Variable	*N*	Range	*M*	*SD*	ICC(1)	ICC(2)	1	2	3	4	5	6
1.	Task interdependence	926	1-7	5.21	1.17	.08	.48	-					
2.	Collective team identification	926	1-5	3.48	0.76	.11	.56	.32***	-				
3.	Information acquisition	1000	1-5	3.23	0.59	.03	.22	.16***	.18***	-			
4.	Boundary crossing	1000	1-5	2.41	0.70	.03	.22	.10**	.05	.50***	-		
5.	Information processing	1008	1-5	3.00	0.67	.15	.66	.28***	.48***	.35***	.20***	-	
6.	Storage and retrieval	1008	1-5	3.13	0.72	.17	.69	.19***	.34***	.24***	.08*	.70***	-
7.	Implementation of CBE[a]	921	1-5	3.41	0.62	.13	.60	.21***	.31***	.32***	.13***	.53***	.45***

Note.
[a]The implementation of competence-based education (CBE) in the educational program as judged by individual teachers.
*$p < .05$, **$p < .01$, ***$p < .001$.

were measured at Level 1, while we are interested in Level 2 outcomes: the implementation of CBE in the educational program and within-team disagreement. Variables assessed at Level 1 typically have both between and within components in a multilevel model (Preacher, Zyhphur, & Zhang, 2010). Because in this study, we focus on explaining differences between teacher teams, we were mainly interested in effects at the between team level. Table 6.3 presents the descriptive statistics, correlations, and ICCs for the task interdependence, collective team identification, and team learning variables. Team members have different views concerning team learning, task interdependence, and collective team identification: between 3 to 17% is explained at the team level.

6.2. Multilevel Structural Equation Modeling

The conceptual model resulted in a reasonable fit to the data, $\chi^2(16, N = 1008) = 97.30$, $p < .001$, CFI = .95, TLI = .83, RMSEA = .07, SRMR-W = .05, SRMR-B = .08. Although the TLI-value was lower than .90, CFI, RMSEA, and SRMR values were acceptable. Figure 6.2 presents the unstandardized estimates for each path. Even though we were mostly interested in associations at the team level, relationships at the within level were modelled as well for the individual-level predictors. Although not depicted in Figure 6.2 for the sake of clarity, at the team level team learning activities were allowed to correlate with each other. At the team level only small correlations between information processing and information acquisition ($r = .02$, $p = .007$) and storage and retrieval ($r = .04$, $p = .004$) were significant. In Figure 6.2 is show that at the team level the implementation level of CBE and disagreement about CBE implementation were not significantly associated with one another. Therefore, higher implementation levels of CBE were not associated with lower levels of disagreement.

6.2.1. The implementation of CBE

In support of Hypothesis 1c, information processing was significantly associated with the implementation of CBE in the educational program at the team level. In teams where teachers reported more information processing, the educational programs were seen as more competence based. However in contrast to Hypotheses 1a, 1b, and 1d, information acquisition, boundary crossing, and storage and retrieval were unrelated to the implementation levels of CBE.

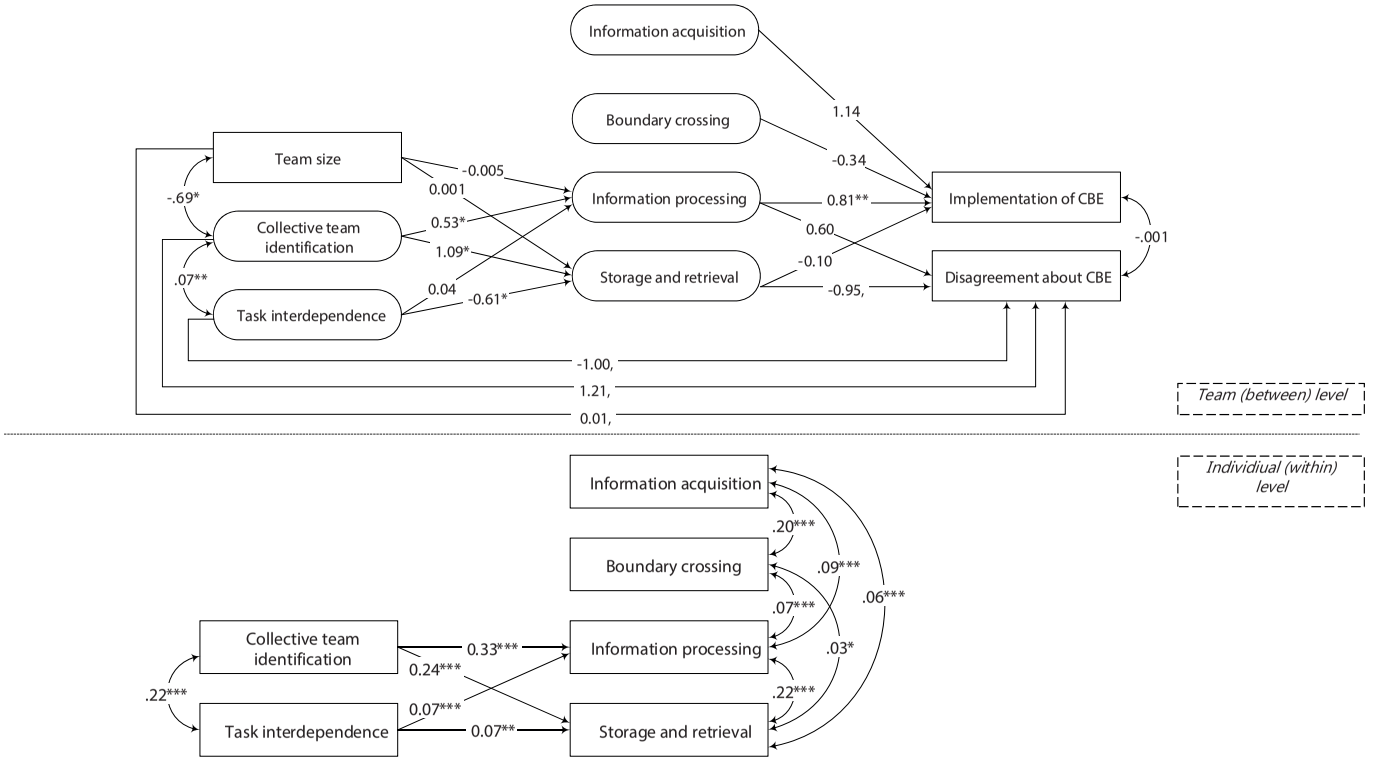

Figure 6.2. - Empirical model of team learning and competence-based education. CBE = Competence-based education. At the team level correlations among team learning activities were modeled but not depicted for the sake of clarity. Unstandardized estimates are reported. †$p < .08$, *$p < .05$, **$p < .01$, ***$p < .001$.

Furthermore, we examined the relationships among team size, task interdependence, and collective team identification on the one hand and with information processing and storage and retrieval on the other hand. In contrast to Hypothesis 2, team size was not significantly associated with information processing and storage and retrieval. In addition, Hypothesis 3 was not supported. Although we expected that higher levels of task interdependence would be associated with higher perceptions of information processing and storage and retrieval, task interdependence was unassociated with information processing. Moreover, the results seemed to indicate that higher levels of task interdependence were associated with lower levels of storage and retrieval. In support of Hypothesis 4, collective team identification was positively associated with information processing and storage and retrieval at the team level.

As collective team identification was significantly related to information processing at the team level, additional analyses were conducted to test for possible indirect effects. Results indicated that collective team identification did not have an indirect effect on the implementation of CBE in the educational program through information processing (95% CI [-13.58, 13.46]).

6.3. Within-team disagreement

In contrast to Hypotheses 5 through 8, no significant relationships with disagreement about CBE emerged, although some trends emerged that were in line with our hypotheses. In support of our expectations, a trend suggested that if teams engage in information storage and retrieval they are less likely to disagree about the implementation levels of CBE in the current program. Another trend revealed that smaller teams and teams that are more interdependent in their tasks are less likely to disagree. However, in contrast to Hypothesis 7, another trend indicated that when team members identify more with their teams they are more likely to disagree.

7. Discussion

Since August 2012, all senior secondary Dutch VET institutes have adopted a competence-based qualification structure in which competences needed for later professional practice form the starting point of curriculum development (Dutch government, n. d.). Because the vocational qualifications require the integration of different academic subjects, VET institutes are increasingly taking on an interdisciplinary, team-based organizational structure (see Truijen et al., 2013). The current study examined the relationship between team learning and the implementation of CBE. Specifically, we examined whether the implementation level of CBE and the within-team (dis)agreement about the current implementation level of CBE in the educational program could be predicted by team size, collective team identification, task interdependence, and team learning.

7.1. Team Learning and CBE

Results demonstrated that higher implementation levels of CBE were not associated with lower levels of disagreement. This might seem contradictory to prior research that indicated that shared understanding of the principles of CBE seemed to facilitate its implementation (Gulikers et al., 2010). However, in the current study we did not examine shared understanding of the CBE principles, but disagreement in perceived level of CBE. This difference in measurement might explain why there was no association between within-team disagreement and overall implementation level of CBE. Second, disagreement is not necessarily bad for the implementation of CBE. If disagreement leads to discussion and constructive conflict in teams, this discussion can eventually facilitate the implementation of CBE or lead to a shared view of the educational program. In future studies, it could therefore be interesting to examine these relationships longitudinally.

In support of Hypothesis 1, we found that information processing was associated with higher levels of CBE implementation in the educational program. This result is in line with research by Meirink et al. (2010), which indicated that information sharing is beneficial for the adoption of new teaching techniques. Therefore, engaging in information processing, such as sharing and

negotiation of different opinions and perspectives seems especially important for the implementation of CBE. In earlier research, information processing also emerged as a crucial team learning activity for team innovativeness and performance, when compared to team learning activities such as information acquisition or storage and retrieval (van Woerkom & Croon, 2009; van Woerkom & van Engen, 2009).

Information processing was not associated with the within-team disagreement about CBE. We expected that when teams engage more in information processing, by sharing information and discussing different views or perspectives, teachers would be more in agreement about the current implementation level of CBE in the program, because sharing and negotiation have been associated with reaching shared understanding (e.g., Van den Bossche et al., 2006, 2011). The non-significant relationship might imply that although opinions or sources of information are shared and/or negotiated, this does not necessarily result in agreement about the level of CBE implementation in the current program. For example, it is possible that information processing is associated with more openness to different opinions and perspectives concerning CBE (see Van Woerkom & Sanders, 2010). Future research could examine the relationships among information processing and disagreement longitudinally.

In contrast to our hypothesis, information storage and retrieval was not associated with the implementation of CBE in educational programs. However, a trend indicated that storage and retrieval was associated with less disagreement in teams. Therefore, storage and retrieval seems more important for reaching within-team agreement than the level of CBE implementation that is achieved. The fact that storage and retrieval and CBE implementation were unrelated can be explained by the autonomy that teacher teams have in determining to what extent they implement CBE principles (see Sturing et al., 2011; Wesselink et al., 2010). Therefore, storage and retrieval will only be associated with the actual level of CBE implementation if a team aims to make its educational programs more competence based. Storage and retrieval might be only marginally related to within-team agreement because team members do not always store relevant information that is shared among team members (e.g., agreements about the desired CBE-level of the education program) physically (e.g., in notes or minutes), but also implicitly in their collective memory (van Woerkom & Croon, 2009).

Based on earlier research, we expected that information acquisition and boundary crossing would be associated with more CBE-oriented programs. In earlier research, it was assumed that participation in professional development activities and discussing implementation issues with other teams or institutes will facilitate the implementation of CBE (Van Woerkom & Sanders, 2010; Koenen et al., 2015). However in contrast to our expectations, the extent in which teams engaged in information gathering activities was not associated with the implementation of CBE in educational programs. Although professional development activities and feedback can be beneficial for education reforms in the long run, these relationships might be difficult to detect in a cross-sectional study. Gathered information first needs to be shared in the team to be effective. In addition, only a small percentage of the variance in this type of learning activities could be explained at the team level.

7.2. Team Size, Task Interdependence, and Collective Team Identification

Although larger teacher teams are often seen as less effective (e.g., Crow & Pounder, 2000), team size was not significantly associated with information processing, storage and retrieval, and subsequently, the implementation of CBE. Even though team size is often included as a control variable when examining team learning, it is often found to be non-associated (Deeter-Schmelz & Ramsey, 2003; Van der Vegt & Bunderson, 2005). Although in larger teams it might be more difficult for each member to interact with every other member (Rentsch & Klimoski, 2001), collective learning activities can still occur even when, for example, not all team members are present during a meeting. This might explain the non-significant relationships between team size and team learning. To achieve a shared view of the educational program, interactions among all members are more important. In line with this view, a trend indicated that larger teams indeed were associated with higher disagreement. Teams with few members have a high probability of interacting with every other member of the team, which is necessary for achieving shared mental models (Rentsch & Klimoski, 2001).

As indicated by Vangrieken et al. (2015) collaboration in teacher teams is often determined by the levels of task interdependence and collective team

identification. At the individual level we found that perceptions of task interdependence were positively associated with information processing and storage and retrieval (see Figure 6.2). At the team level this significant association disappeared for information processing. The lack of associations at the team level for information processing might be explained by the small amount of variance that could be explained at the between level: only 8% of the variance in task interdependence could be explained at the team level.

At the team level, a negative association was found between task interdependence and storage and retrieval, suggesting that teams with higher levels of task interdependence were less likely to participate in information storage and retrieval. Possibly, interdependence can act as a double-edged sword, as earlier research has demonstrated that task interdependence can promote or hinder learning. For task interdependence to be effective for team learning it needs to co-occur with high levels of perceived goal interdependence (see Van der Vegt & Janssen, 2003). If task interdependence is high but perceptions of goal interdependence are low, team members are more likely to compete with one another to let their own individual interests prevail. We assumed that teachers in VET teams have the same goal, as they are held collectively responsible for the quality of the educational program (Wesselink et al., 2010). However, it is conceivable that teachers may also have competing goals. Although all Dutch VET institutions are required to adopt the vocational qualification structure as the organizing unit for the (re)design of the educational program (Dutch Government, n. d.), teachers have some autonomy over the extent to which they implement certain CBE principles, such as opportunities for self-reflection, self-directed learning, and flexibility (Sturing et al., 2011; Wesselink et al., 2007, 2010). It is therefore possible that teachers have personal goals that compete with team goals or that conflicting views or goals exist within a teacher team regarding the desired level of CBE implementation that needs to be achieved. For example, some language teachers might fear that their subject disappears in the new competence-based curriculum and might not feel comfortable with the fact that language education needs to be completely integrated in the program. Future research should therefore also examine teachers' perceptions of goal interdependence within teacher teams.

Although the relationship between task interdependence and team learning was not supported at the team level, a trend indicated that task interdependence

is important for achieving agreement about the level of CBE implementation in the current program. Task interdependence is likely to increase communication within teams (Van der Vegt et al., 1998), leading to higher levels of agreement (or lower levels of disagreement) about the levels of implementation of CBE in the educational program.

In support of our hypothesis and previous research by Van der Vegt and Bunderson (2005), collective team identification was associated with information processing and storage and retrieval at both the individual and team levels. Therefore, emotional identification with the team seems to facilitate team learning processes. Although collective team identification was associated with information processing, which was subsequently associated with the implementation of CBE at the team level, no support was found for an indirect effect.

In contrast to our hypothesis, we found a trend indicating that higher levels of collective team identification were associated with more within-team disagreement. The relationship was in the opposite direction of our expectation and needs further investigation. Possibly, team members feel more room for negotiation and disagreement and might experience more psychological safety in teams with higher levels of collective team identification. Psychological safety refers to the shared belief that the team is safe for interpersonal risk taking (Edmondson, 1999). To examine this, future studies should examine the relationship between collective team identification, psychological safety, and within-team disagreement about CBE longitudinally.

Moreover, the relationship between collective team identification and disagreement is possibly more complex relative to what was tested in the model. Even though teams are collectively responsible for the quality of the educational program (Wesselink et al., 2010), teachers can still have different individual goals. If teachers' goals diverge from one another, collective team identification alone is not enough to overcome these differences. Research by Pearsall and Venkataramani (2014), for example, indicated that when team members' individual goals diverge, teams were more effective when collective team identification was coupled with a team learning orientation.

7.3. Limitations and Future Research

The current study examined the effect of team size on team learning and disagreement; however, other group composition factors such as homogeneity were not included in this study. Both Truijen et al. (2013) and Crow and Pounder (2000) indicated that homogeneity in educational view or philosophy is important for the effectiveness of teacher teams. Results by Stroet et al. (2016) regarding students' motivation seems to support this. Consideration of educational views might be especially relevant for teacher teams implementing CBE. Könings, Brand-Gruwel, and Van Merriënboer (2007) demonstrated that teachers' conceptions of student-centered versus teacher-centered learning influence their teaching practice and perceptions of a learning environment. Future research could therefore examine the effect of homogeneity in teachers' preferences for learner-centered versus teacher-centered practices on the implementation of specific CBE principles. In addition, future research might examine the effects of the implementation of CBE in educational programs and the effects of within-team agreement about the level of CBE implementation on students' motivation, performance, dropout rates, and employability. Although, CBE is assumed to be effective for student outcomes, currently there is no empirical evidence to support this claim. Examining the effectiveness of CBE is important, especially because the usefulness of CBE has been debated (Hirtt, 2009).

The current study was a cross-sectional study with self-reports, therefore no claims can be made concerning causality. Longitudinal studies combined with objective outcomes measures (e.g., performance measures) are needed to test if the current associations represent causal effects and can be replicated. Moreover, results were obtained through an online questionnaire sent via e-mail to teachers. Because not all teachers of a team filled out the questionnaire it is possible that results are not representative for all VET teachers although average age and gender ratio in our sample were representative for VET teachers in the Netherlands (Lubberman et al., 2011).

Our results further indicate that the team level explained only a limited amount of the variance in task interdependence, suggesting that teachers within the same team have different interpretations of task interdependence. This

finding may be caused by the fact that teacher teams do not represent 'real' teams (Vangrieken et al., 2015). As teacher education and teaching culture in schools have traditionally been characterized by high levels of teacher independence in class preparations and teaching, teacher teams are not easily implemented (Gajda & Koliba, 2008). For teachers and organizations these results underscore the importance of a change in mentality toward teacher collaboration (see Vangrieken et al., 2015). If teacher teams do not have the willingness to collaborate, the push toward a team-based organizational structure may only frustrate teachers. Therefore, it is important to investigate which factors affect the willingness to collaborate and how this can be supported by the VET institute.

7.4. Conclusion and Implications

In the Netherlands, there is a push toward the implementation of CBE in secondary vocational education as CBE is believed to reduce student dropout, increase motivation, and promote lifelong learning skills. Many teachers struggle with the implementation of CBE principles, such as increased student responsibility, in their educational programs and experience difficulties with team work. However, effective collaboration among teacher team members is important to facilitate education reform. In the current study we therefore examined in a large survey study among 93 teacher teams how task interdependence, collective team identification, and team size are associated with participation in team learning activities, and how this in turn affects the implementation level of CBE in educational programs. In addition, we examined the level of within-team disagreement about the current level of CBE in the educational program. Information processing was associated with higher levels of CBE implementation and storage and retrieval seemed to be associated with less within-team disagreement about the education program. These results indicate that participation in collective team learning activities is important for education reform in the VET sector. Furthermore, our results revealed trends indicating that higher task interdependence and lower team size were associated with lower levels of disagreement. It is likely that team size, task interdependence, and collective team learning activities are not only important for the implementation of CBE, but also for other education reforms that require teachers to work as a team. Our results imply that it is important for educational institutes

to support team learning activities in teacher teams if they want to facilitate education reforms. In addition, team size needs to be taken into account when forming (interdisciplinary) teacher teams. Larger team sizes might complicate interaction opportunities within a team, making it more difficult to reach agreement about the educational program.

CHAPTER 7

General conclusion and discussion

This dissertation on teachers' professional learning in senior secondary vocational education (SSVET) combined the perspective of individual teacher learning and team learning in teacher teams relative to relevant conditions (e.g., goal orientation, managerial coaching, and team characteristics) and outcomes (implementation of the educational innovation CBE). Five studies were conducted, which have been reported in the previous chapters. Chapter 2 addressed the current state of the literature on teachers' goal orientations and, to this end, a systematic literature review was conducted. In Chapter 3, a new method of analysis was applied to goal orientations in the work domain. Individual goal orientations were used to explore if combinations of goal orientations result in distinct goal orientation profiles. In this chapter, the value of goal orientation profiles was linked to teachers' individual professional learning. Chapter 4 addressed the role of managerial coaching behavior in the change in goal orientation profiles over time. In chapter 5, the current state of research on team learning in teacher teams was presented. Building upon the lack of knowledge on the impact of team learning on education, the last empirical chapter, chapter 6, explored the relationship between team characteristics, team learning and the implementation of Competence-Based Education (CBE) in the Netherlands. In this general discussion and conclusion, the answers to the six research questions underlying these studies will be given and reflected upon. The answers to the research questions will be linked to suggestions for future research and implications for educational practice. Furthermore, the strengths and limitations of the studies in this dissertation will be discussed, and recommendations for future research are addressed.

7.1. Research question 1: What are teachers' goal orientations, how are teachers' goal orientations measured and how are teachers' goal orientations related to predictors and outcomes?

For the first research question of this dissertation, I explored the concept of teachers' goal orientations and related measures. Moreover, I examined to what extent teachers' goal orientations are linked to predictors and outcomes related to the school, teachers' and students' contexts. Thus, a systematic review was conducted. The results of this systematic review were presented in Chapter 2 of this dissertation.

Teachers' goal orientation can be defined as the achievement motivation of teachers for tasks at work (Nitsche et al., 2011). Based on the results of the systematic review in chapter 1, it can be concluded that in teachers' goal orientations research, a distinction was generally made between the mastery-approach, performance-approach, performance-avoidance, work-avoidance and relational goal orientations. Although a wide variety of teachers' goal orientations was found in the literature, most studies predominantly found significant results when using the mastery-approach goal orientation. The mastery-approach goal orientation, defined as a focus on challenging tasks from which teachers can learn much, is found to have a positive effect on outcomes, such as teacher professional development, teachers' well-being and mastery-oriented instructional practices. The second most used teachers' goal orientation is the performance-approach goal orientation, which is not surprising because the achievement goal orientation originally started with the distinction between mastery and performance goals. Furthermore, while the performance-avoidance goal orientation is commonly used in the definitions of teachers' goal orientation, the inclusion of this variable in teachers' goal orientations research was less frequent compared to the mastery-approach and performance-approach goal orientations, which might be explained by the general practice of goal orientation scholars to focus on the positive impact of mastery-approach goal orientations and their positive contribution to teachers' well-being, professional development and instructional practices. The least used teachers' goal orientations were the relational goal orientation (Butler, 2012) and the work avoidance goal orientation. Although the differentiation in five components

of teachers' goal orientations already provide the possibility of a differentiated perspective on teachers' goal orientations, the mastery-avoidance goal orientation, referring to the willingness to avoid a loss of competence at work (Baranik et al., 2010; Elliot & McGregor, 2001), was not included in the studies of teachers' goal orientation. While the definition of mastery-avoidance is related to the performance-avoidance goal orientation, the impact of mastery-avoidance goal orientations on, for example, help-seeking and performance are not as substantially negative as the performance-avoidance goal orientations (Baranik et al., 2010). The inclusion of the mastery-avoidance goal orientation will contribute to a more thorough understanding of teachers' goal orientations. Moreover, older workers are known to report higher-levels of mastery-avoidance goal orientations (de Lange et al., 2010), and because the teacher population in SSVET is aging (Onderwijs in Cijfers, 2018), the inclusion of the mastery-avoidance goal orientation in future work on teachers' goal orientations is recommended.

The second part of the first research question refers to how teachers' goal orientations were measured. The results of the systematic review in Chapter 2 demonstrated that both general work-related and teaching-context specific measures were used by scholars. An advantage of measures that were specifically designed for the teaching context is that they are more easily recognizable for teachers. When items in teachers' goal orientations measures refer to specific situations teachers face during their daily work, it is expected that the teachers' responses will be more comparable. Moreover, the use of general measures for teachers' goal orientations could distract teachers from focusing on their daily work situations because items can be generally applied to various contexts (at home, at work, in interaction with friends) (Lievens, De Corte, & Schollaert, 2008). Furthermore, research from the field of personality on the impact of frame of reference demonstrated that the predictive validity for contextualized measures is higher compared to noncontextualized measures (Hunthausen, Truxillo, Bauer, & Hammer, 2003; Shaffer Jonathan & Postlethwaite Bennett, 2012). A downside of using contextualized scales for teachers' goal orientations is that the generalizability of results across sectors is limited. At this moment, both types of measures are used, which hampers the possibilities to compare the outcomes to other contexts, such as health care or business. Although the advantage of contextualized goal orientations measures would be a strong argument to use contextualized measures in future, the current contextualized

scales that were frequently used have limited content validity. Therefore, the use of teachers' goal orientations measures must be carefully considered. Because teachers' goal orientations are frequently studied in relationship to school-specific outcomes, such as students' perceptions of teachers' behavior (Schiefele & Schaffner, 2015) and instructional practices (Butler & Shibaz, 2014; Retelsdorf et al., 2010), it would be worthwhile to explore whether the general and contextualized goal orientations measures truly differ in the strength of their effects.

The last part of this first research question refers to the correlates found for teachers' goal orientations. A first conclusion is that most studies included multiple goal orientations (e.g., dual or trichotomous goal orientation structure); however, most significant results were found for the relationship with the mastery-approach goal orientation. For the performance-approach and performance-avoidance goal orientations, the results were generally not significant. The results of the systematic review demonstrated that the teachers' mastery-approach goal orientation was generally positively associated with their well-being, professional learning and mastery-oriented instructional practices. However, the teachers' performance-approach goal orientation was positively related to their self-efficacy and performance-oriented instructional practices that enhance surface level learning. Moreover, performance-avoidance goal orientations were positively related to instructional practices that stimulate surface level learning in students, and negatively related to students learning and educational quality.

Compared to general research on teachers' goal orientations, the main focus in the current literature of teachers' goal orientation was on the relationship between teachers' single goal orientations and antecedents and outcomes, resulting in studies in which teachers' goal orientations were studied parallel to one another instead of in combination with one another, from a multiple goal perspective. The use of the multiple goal perspective (Barron & Harackiewicz, 2001) in the context of teaching could demonstrate whether the positive impact of the master-approach goal orientation could function as a buffer of, for example, the performance-avoidance goal orientation. For the impact of teachers' goal orientations on student learning, the buffer effect is specifically relevant because performance-avoidance goal orientations were associated with instructional practices that have a negative impact on student outcomes (Daumiller et al., 2016; Paulick et al., 2013).

7.2. Research question 2: To what extent do teachers' goal orientation profiles exist and how do teachers' goal orientation profiles change over time?

The aim of the second research question was to explore to what extent teachers' goal orientation profiles exist and how teachers' goal orientation profiles change over time. One of the conclusions in chapter 2 was that the multiple goal perspective (Barron & Harackiewicz, 2001) and the application of goal orientation profiles have not been explored in the context of education. Therefore, following the approach of research on students' goal orientations (Jansen in de Wal et al., 2015; Luo et al., 2011), a cross-sectional study was conducted among SSVET teachers (Chapter 3) to explore to what extent teachers' goal orientation profiles exist.

In chapter 3, five goal orientation profiles were identified: the *success-oriented* (high mastery-approach and high performance-approach, low performance-avoidance), the *diffuse* (all goal orientations, moderate), the *high-avoidance* (low mastery-approach, moderate performance-approach and high performance-avoidance goal orientation), the *moderate learning* (moderate mastery-approach, low performance-approach and low performance-avoidance goal orientation), and the *performance-oriented* goal orientation profile (i.e., moderate mastery-approach, moderate performance-approach and high performance-avoidance goal orientation). The type and number of goal orientation profiles found was closely comparable to studies of student samples, which found between three and six goal orientation profiles, with similar characteristics (Jansen in de Wal et al., 2015; Luo et al., 2011; Schwinger et al., 2016; Tapola & Niemivirta, 2008; Tuominen-Soini et al., 2011, 2012; Wang et al., 2016). Although the number of profiles identified provides a reasonable argumentation that teachers' goal orientation profiles exist, it is difficult to conclude whether these identified goal orientation profiles are stable and identified in other samples. When the nature of goal orientation profiles is demonstrated and confirmed in other samples of teachers, managers could use interventions to aim for change towards preferred goal orientation profiles.

As a follow-up to the cross-sectional study in chapter 3, the possibility of a change in teachers' goal orientations over time was examined in chapter 4. A

two-wave study (one year between each measurement) was conducted among teachers in SSVET. In this study, four goal orientation profiles were identified at both moments in time: the *success-oriented* (i.e., the high mastery-approach and high performance-approach, low performance-avoidance), the *diffuse* (all goal orientations moderate), the *low-performance* (i.e., the moderate mastery-approach, low performance-approach and performance-avoidance), and the *high-avoidance* goal orientation profile (i.e., the low mastery-approach, moderate performance-approach and high performance-avoidance goal orientation). Using latent transition analysis, I explored how many teachers changed their goal orientation profiles over time. The results of this analyses demonstrated that 91.2% of the teachers remained stable in the same profile. From the teachers that changed goal orientation profiles, the change was mostly observed in adjacent profiles with similar characteristics (e.g., from the success-oriented to the moderate-learning profile and vice versa). This change can be partly explained by the impact of managerial coaching behavior. A reflection on the impact of managerial coaching behavior on teachers' goal orientation is given in the discussion of the fourth research question.

7.3. Research question 3: Which of the teachers' goal orientation profiles is the most beneficial for teachers' professional learning?

To answer research question 3, I explored the value of goal orientation profiles for teachers' professional learning. The results from the systematic literature review demonstrated that one of the variables frequently linked to teachers' goal orientations is the participation in professional development activities (Chughtai & Buckley, 2010; Nitsche et al., 2011, 2013; Runhaar et al., 2010; van Daal et al., 2014). Using the existing literature on teacher professional development, it was expected that goal orientation profiles with high levels of mastery-approach goal orientation would result in higher participation in professional development activities compared profiles with high levels of performance-avoidance goals. In chapter 3, I explored the difference in the participation in professional development activities, based on teachers' goal orientation profiles. Two professional development activities were studied in detail: asking for feedback and acquisition of information. These two professional development activities cover a broad range of informal learning activities defined by Kwakman (2003).

To answer research question 3, the mean scores on asking for feedback and information acquisition were compared for the different goal orientation profiles. Teachers with a success-oriented profile scored significantly higher, while teachers with a high-avoidance goal orientation profile scored significantly lower on asking for feedback and information acquisition. The mean score differences between the moderate learning, diffuse and performance-oriented were small and not significant. Therefore, I concluded that for participation in professional learning activities, the success-oriented goal orientation profile seems to be the most suitable profile. The success-oriented profile combines high levels of both the mastery-approach and performance-approach goal orientations. The results demonstrate that studying combinations instead of single goal orientations adds value to current research on teachers' goal orientations and professional learning. Chapter 3 demonstrates that looking at the specific configuration of the success-oriented profile adds value to focusing only on the relationship between the mastery-approach goal orientation and professional learning, which most studies have done. The empirical results, therefore, underline the necessity to look at combinations of goal orientations instead of single goal orientations.

The answers to this research question contribute to the understanding of the impact of teachers' goal orientation profiles on teachers' participation in professional development activities. However, the outcome variables used to operationalize professional learning only measure the frequency of participation in these activities and do not consider the intention behind these specific activities. For example, teachers with a success-oriented goal orientation profile could seek for more feedback to reduce the uncertainty on how they are working towards their goals, whereas teachers with a high-avoidance goal orientation profile could seek feedback only when they are certain to receive positive confirmation of their performance. Future research should determine whether teachers with different profiles also differ in the type of feedback they solicit.

7.4. Research question 4: How can managers influence teachers' goal orientation profiles?

By answering research question 3, I demonstrated that teachers' goal orientation profiles are associated with teacher professional development and the

specific combination of high learning, high performance-approach and low performance-avoidance goal orientations that is most beneficial for teacher professional development. Moreover, the results demonstrated that a high performance-avoidance goal orientation profile resulted in the lowest participation in professional development activities. To counter the negative impact of the high-avoidance goal orientation profile, studies are needed to investigate the factors that could influence changes in goal orientation profiles. Research question 4 focuses on the impact of managers on the change in goal orientation profiles over time. Although the results for research question 2 demonstrate that the change between goal orientation profiles over two years was low (9.8%), there were some interesting changes from the diffuse to the success-oriented goal orientation profile. Therefore, in Chapter 4, I examined to what extent teachers can be motivated by managerial coaching behavior to change in the direction of a success-oriented goal orientation profile over time.

The results from chapter 4 suggest that managers can stimulate teachers to change to the success-oriented goal orientation profile by demonstrating managerial coaching behaviors. Following the definition of Heslin et al. (2006), managerial coaching behavior was divided into three distinct components: inspiration, facilitation and guidance. The results demonstrated that facilitative managerial behavior was positively associated with a success-oriented profile, whereas guidance managerial behavior was negatively associated with a success-oriented profile. Over time, only the facilitative managerial coaching behavior contributed to change towards the success-oriented profile. Thus, team managers who invest time in being a constructive conversation partner for teachers, stimulate teachers to continuously develop themselves but also emphasize the need to strive for high levels of performance. The expression of such facilitative managerial coaching behavior results in a change of teachers with a diffuse goal orientation profile to a success-oriented goal orientation profile. In contrast, team managers who primarily focus on the need for increased performance or express trust in employees, and thus express guidance-oriented managerial coaching behavior, do not stimulate teachers enough to change towards the success-oriented profile and even could have the opposite effect. Therefore, the more facilitative managerial coaching behavior is expressed by the manager, the more this contributes to change towards the preferred success-oriented goal orientation profile.

7.5. Research question 5: What are stimulating and hindering factors for team learning in teacher teams?

The aim of research question 5 was to identify stimulating and hindering factors for team learning in teacher teams. A systematic literature review study was completed (Chapter 5 of this dissertation) and an empirical study (Chapter 6) was conducted to explore this research question. The systematic review of the team learning literature for teacher teams revealed that the number of studies on team learning in teacher teams is falling behind when compared to the rising number of team learning studies in general (Decuyper et al., 2010). Nevertheless, the mixture of qualitative, quantitative and mixed-method studies included in this systematic review provided the first insight in stimulating and hindering factors for team learning in teacher teams specifically.

The results of our review demonstrate that the obtained depth of conversations during team meetings is a stimulating factor for the amount of team learning in teacher teams (Havnes, 2009; Kruse & Louis, 1997). Spending time in the team setting is a general requirement for team learning in teacher teams because teachers do not meet one another frequently during their work days. To encourage more frequent interaction between team members, team leaders and team members could initiate these team meetings themselves more often. However, only organizing team meetings is not enough, the structure of a team meeting also seems to matter. In team meetings with a clear structure and a common goal, teachers did have time for in-depth conversations of teaching, while in ill-structured meetings, the number of conversations with a reflective character was lower (Kruse & Louis, 1997). The results of our review demonstrate that the depth of conversations during team meetings is a stimulating factor for team learning; however, it remains unclear how team learning evolves during team meetings. A recent study of Zoethout et al. (2017) investigated the emergence of team learning processes in teacher teams by evaluating the type and frequency of discussions that focus on clarification of ideas and working towards consensus. Their findings confirm the need for structured meetings as a means to enhance the depth of conversations. To organize these team meetings, team leaders are of major importance because they set the agenda and thereby decide how much time is devoted to specific topics.

Although most of the studies in our review identified factors that contributed positively to team learning in teacher teams (e.g., collective team identification, affective organizational commitment, transformational leadership, psychological safety) a few hindering factors for team learning were identified as well (e.g., team member age or diversity in tenure and occupational experience); however, these findings are based on single cross-sectional studies only.

The empirical study in Chapter 6 explored to what extent task interdependence, collective team identification and team size were of importance for team learning in teacher teams. The results demonstrated that collective team identification contributed positively to information processing (sharing, co-construction and constructive conflict) and storage and retrieval of information in teacher teams. Team size was not related to information processing and information storage and retrieval at teacher team level. Moreover, task interdependence was found to be a hindering factor for information storage and retrieval in teacher teams. The type of teams included in Chapter 6 might explain this contra-intuitive finding. In an empirical study, teacher teams responsible for an educational program were invited to participate. Although these teacher teams had a clear common goal (e.g., collective responsibility for the quality of an educational program), this common goal can be perceived as abstract because on a daily basis, teachers mainly teach solely without dependence on colleagues and levels of task interdependence are therefore low. More research is needed to explore at what levels perceived task interdependence contribute to team learning in teacher teams and to/from what level onwards that task interdependence hinders team learning.

7.6. Research question 6: What is the impact of team learning in teacher teams on the implementation of competence-based education in SSVET?

To answer research question 6, an empirical study was conducted (Chapter 6) to examine the impact of team learning in teacher teams on the level of implementation of CBE in SSVET teacher teams. Chapter 6 shows that teacher teams reporting higher levels of information processing also report higher levels of implementation of competence-based education. Information storage and retrieval processes were not significantly associated with a higher level of

CBE implementation. The absence of the relationship for storage and retrieval is interesting because recent qualitative studies have revealed that storage of information is an important prerequisite for successful team learning (Zoethout et al., 2017).

With regard to the measurement of CBE, this dissertation makes a unique contribution. In chapter 6, a new measure of 12 items was developed based on the principles of competence-based education defined by Wesselink (2010) and Sturing et al. (2011). These principles were measured in a time consuming qualitative measure, which was not suitable for inclusion in a large quantitative scale. Using a pilot sample and cross-sectional survey, a new CBE scale was developed that can be incorporated in regular surveys and can, therefore, be used in large quantitative studies. This also enables the possibility to study the impact of CBE on students' learning (e.g., drop-out, student satisfaction) in the future.

In conclusion, the results from chapter 6 emphasize that information processing is the most important predictor of the implementation of competence-based education. The other components of the team learning process (information acquisition, boundary crossing and information storage and retrieval) do not contribute to successful implementation of CBE.

Research on the impact of the implementation of CBE on student outcomes does not currently exist (Wesselink, Biemans, Gulikers, & Mulder, 2017). Future research could investigate the impact of team learning on competence-based education by adding the influence of team learning through CBE on student outcomes. As VET institutions are confronted with new innovations every few years (e.g., currently the implementation of elective modules in the Netherlands), this could be an opportunity to carefully design a longitudinal study to evaluate the impact of these innovations on student outcomes, dropout, and continuing in higher level programs. The results of this longitudinal study can be used to assess the role of team learning relationship with the effectiveness of CBE for students learning.

2. Directions for future research

This dissertation contributed to gaps in the literature concerning the domain of teachers' goal orientations and teacher team learning. In the separate chapters of this dissertation, specific suggestions for future research were formulated. In addition to these formulated specific suggestions, general recommendations to advance the field of teachers' goal orientation research and teacher team learning are addressed in this part of the discussion.

As an antecedent of teachers' goal orientations, this dissertation only included managerial coaching behavior as a leadership style in the empirical studies. Although this leadership style is individually focused and therefore has a strong fit with the individual teacher goal orientation profiles, taking into account other types of leadership would be valuable. Specifically, leadership styles that can activate both learning and performance-approach goal orientations might be linked to a positive stimulation of individual and team learning processes. Thus, team coaching might be a promising leadership style to stimulate team learning in teams with low levels of team learning because this leadership style combines a focus on clear values and goals with a focus on collective reflection (Buljac-Samardzic & van Woerkom, 2015). In addition to managerial coaching behavior and team coaching, it would be worthwhile to explore the role of instructional leadership. Instructional leadership is characterized by a strong focus on school goals to obtain student success, leading the innovation of curricula and stimulation of a climate for learning in the school (Hallinger, 2003). Therefore, it can be expected that instructional leadership could stimulate levels of performance-approach goals of teachers. For the teachers' goal orientation profiles described in this dissertation, this expectation could imply that teachers in profiles with moderate to high levels of mastery-approach goal orientations, and moderate to low levels of performance-approach goal orientations could benefit from instructional leadership practices to change towards the success-oriented goal orientation profile. While the focus of instructional leadership on school goals and student performance can result in a pressure for teachers, the combination with support for teacher professional development could make this a potentially successful leadership behavior, which could stimulate change towards the success-oriented goal orientation profile.

Moreover, the study presented in chapter 3 focused on only two forms of teacher professional learning (asking for feedback and information acquisition), both of which are individually oriented. During their work, teachers are increasingly more confronted with occasions to learn collaboratively: from team learning in teacher teams to teacher learning in professional learning communities or communities of practice (Vangrieken et al., 2015). Therefore, it would be valuable to study how teachers' goal orientation profiles relate to teachers' collaborative learning activities. From a perspective of team diversity, the interactions among individual goal orientation profiles within a team could be studied in relationship to participation in collaborative learning activities, such as team learning. Current research on team goal orientations has studied the existence of team goal orientations but, comparable to individual goal orientation research, the focus was mainly on the impact of single team goal orientations on specific outcomes (Dragoni & Kuenzi, 2012). In addition to the operationalization of goal orientations on team level, experimental research was conducted by Nederveen Pieterse, van Knippenberg, and van Ginkel (2011) to study the impact of goal orientation diversity in teams on team reflexivity and team performance. This study hypothesized that each goal orientation has a different impact on, for example, the level of information processing. In predominant mastery goal orientated teams, this impact would lead to deep level team information processing, while in predominant performance goal orientated teams this would lead to surface level information processing and a strong focus on demonstration of ability. This study found that diversity of goal orientations was more important than the precise level of goal orientations. In teams with a high level of goal orientation diversity, there was more interaction and information exchange, while for teams with homogeneous goal orientations, levels of interaction were lower and did not contribute to team reflexivity. This finding supports the expectation that diversity of goal orientations in a team is related to teachers' collaborative learning activities. Although recent research on diversity of goal orientations provides a valuable start for future research they currently neglect the possibility of the existence of team goal orientation profiles. The exploration of team goal orientation profiles, or of the most useful configuration of individual goal orientation profiles in a team, could contribute to research in the field of team dynamics and team learning, thereby responding to the call of Pastor et al. (2007) for more team-level oriented goal orientation research.

The review of team learning in teacher teams (Chapter 5) in this dissertation showed that the majority of the studies conducted on teacher team learning focus on positive and stimulating factors for team learning, which was also the case in the empirical study on teacher team learning in Chapter 6. In future research, regularly noted hindering factors for team learning, such as group think, diffusion of responsibilities, free riding, social loafing, a dominant leader or conflict escalation, need to more attention to develop a full picture of team learning in teacher teams.

Given the existence of teachers' goal orientation profiles and the potential of change, future research could examine change over a longer time period (e.g., five years). Chapter 4 of this dissertation only used a period of one year, which might be too short to identify major changes. Therefore, a longer longitudinal study could provide insight into changes related to aging and work experience. For example, teachers who start their career might initially belong to the success-oriented profile but might change over time to a more diffuse profile. Moreover, because goal orientations change with age (de Lange et al., 2010), a five-year study could provide inside in relevant moments of change. These insights could enhance the understanding of the development of teachers' goal orientation profiles at work. Another topic that needs to be incorporated in future research is the longitudinal character of team learning because all studies included in the systematic literature review of Chapter 5 and the empirical study in chapter 6 only used a cross-sectional research design. Therefore, insight into the emergence of team learning in teacher teams over time is lacking. Specifically, longitudinal studies using different time spans could provide an insight into the time needed for team learning to develop. Scholars could explore if the identified stimulating factors for team learning behave as a catalyst for team learning over time (linear growth) or that a balanced approach is needed because an optimal value of antecedents for team learning exists (curvilinear effects).

3. Strengths and limitations

As with every research project, this dissertation has some strengths and limitations.

One strength of this dissertation is the sample of SSVET teacher teams. Although the number of conducted studies in SSVET is increasing, there is still less focus on SSVET in educational sciences. Moreover, research from other educational sectors is not always applicable to SSVET because the challenges of SSVET (e.g., high-level drop-out of students) are different and force teacher teams to continuously invest in their educational program. Therefore, conducting this dissertation in the context of SSVET contributed to the enhanced understanding of factors that contribute to both teacher professional development and the impact of teachers' team learning on the implementation of CBE. Linking teachers' team learning with the effectiveness of educational innovation contributed to the call for more research with a focus on the impact of professional development (Desimone, 2009). From a methodological point of view, the initial research design including 100 teacher teams from SSVET provides a valuable basis for research on professional development. In future longitudinal studies, scholars need to consider if the topic of study is expected to change over time without any intervention. Although the initial aim of this dissertation was to address the added value of team conditions and individual differences for change in team learning over time, there were only minor (not significant) changes in levels of team learning across different years. Therefore, I conclude that team learning could be more difficult to change over time than expected. Longitudinal studies on team learning are not conducted frequently (Decuyper et al., 2010), and future research that studies the emergence of team learning over time would be a valuable addition (Kozlowski, 2015).

A second strength of this dissertation is the study of teacher work teams in SSVET. As demonstrated by the results from chapter 5 (the systematic review of team learning in teacher teams), the number of studies on team learning in teacher work teams is still low. One of the explanations for this lack of research is the use of various definitions of teacher teams. During the recruitment procedure of teacher teams for this study, there was great variety in the teacher teams, and a large variability in teacher teams exists. For example, some

teacher teams were small (5-10 teachers), while other teacher teams included over 40 teachers. Although these large teams are collectively responsible for an educational program, team learning during team meetings with this large number of teachers is difficult to accomplish, and communication is expected to remain at the level of *coordination* as described by Engeström et al. (1997). The large teacher teams sampled for this dissertation might also explain why the within-team agreement is lower than expected. In future research, it would be helpful if studies include smaller subteams that intensively work together (i.e., year teams or subject-specific teams) instead of larger teacher teams responsible for a complete education program. It could also be that teachers are members of multiple smaller teams at the same time. For example, teachers could be a member of both disciplinary teams (e.g., teams with teachers from one specific course or year) and multidisciplinary teams (e.g., teams with teachers from multiple subjects, such as languages and vocational courses, who work together to teach a research-oriented course). This multiple team membership (MTM) could increase team learning in teacher teams. When teachers must switch between teacher teams, they could use the knowledge acquired in one team and introduce this as new information in another team. The introduction of this new information could lead to constructive conflicts and reflective discourse in these teams and result in team learning. To the best of my knowledge, there are no studies that focus on the relationship between MTM and team learning. A curvilinear relationship between the number of team memberships and team learning can be expected because low MTM could be related to group think due to limited levels of boundary crossing, while high MTM is also not efficient because time and knowledge is fragmented. Future research that explores the added value of MTM for team learning in teacher teams is needed to explore what type of team organization within schools contributes to the most effective distribution of time, attention and information.

Third, the empirical chapters from this dissertation (chapter 3, 4 & 6) use a large data set collected in SSVET teams in the Netherlands. All empirical studies in this dissertation are quantitative in nature. This fact is a strength because the number of quantitative studies on team learning in teacher teams is as pointed out in chapter 5. However, it is also a limitation because qualitative research might have provided a more in-depth insight into the underlying causes and processes of team learning in teacher teams. Although not common

in goal orientation research, a qualitative approach exploring goal orientations in relation to professional learning activities could shed more light on the different types of motivations that inspire asking for feedback (e.g., to confirm their performance or to learn from mistakes?).

4. Implications for educational practice

The topic of professional development of teachers is widely discussed by policy makers, teachers and principals. In the past years, the use of teacher teams is promoted as a promising approach for collaborative teacher development in SSVET (MBO-Raad, 2009). Based on this dissertation, multiple practical implications can be formulated, and they are relevant to the primary stakeholders involved with teacher professional development: policy makers, team leaders and principals, and teachers themselves.

4.1. Implications for policy makers

The Dutch government focuses strongly on teacher professional development and perceives teacher teams to be a promising approach to counter the current challenges in education. One of the assumptions of organizing schools in teacher teams is that they can solve problems, such as daily shortages due to illness, themselves (van den Berg, Scheeren, & Arslan, 2017). In addition to the advantage of teacher teams being able to cope with daily problems themselves, the professional agreements between employers and trade unions (MBO-Raad, 2009) also emphasize that teacher teams are responsible for their own professional development. This dissertation demonstrated that the use of teacher teams is indeed promising to enhance teacher professional learning. However, a practical limitation for this policy suggestion must be addressed here. Most of the teacher teams that were studied in this dissertation were large (on average, 22 teachers), which hinders effective team learning. One explanation for these large teams is that 36% of the teachers work less than 0.8 fte (STAMOS, 2018). If, for example, 12 full-time teachers are necessary to cover a complete educational program, but teachers work mainly part-time, the actual number of teachers present during team meetings is higher. Consequently, during team

meetings, the opportunity for collaborative discussions is reduced and the possibility exists that teacher team meetings will mainly focus on the coordination of tasks. Therefore, policy makers must consider that for effective team learning in teacher teams, the actual number of teachers w to be considered.
Furthermore, policy makers on a national level suggest that school leaders are important to stimulate teacher professional development (Inspectie van het Onderwijs, 2018). This suggestion is supported by this dissertation. According to the Inspectorate of Education, school leaders need to support, facilitate and guide teachers to stimulate professional learning in teacher teams in schools. The results from this dissertation suggest that facilitative managerial coaching behavior and empowering leadership styles stimulate teachers' professional learning. To enhance team leaders' awareness of their impacts on teacher professional development, specific policies can be developed to stimulate team leaders to actively develop their own leadership skills and to learn from other teams, in or outside of school. HR policy advisors within schools can stimulate team leaders to pick up the gauntlet for teacher professional development and support team leaders with opportunities for training and instruments to develop their skills (Leisink & Boselie, 2014). According to this dissertation, these instruments should, on the one hand, focus on the development of facilitative managerial coaching skills and, on the other hand, focus on the involvement of the team leader during team meetings.

4.2. Implications for team leaders

The results of this dissertation demonstrate that the team leader has an important role to enhance teachers' goal orientation at work and to facilitative effective team learning. The results from the literature study on teachers' goal orientations in chapter 2 demonstrate that the transformational leadership and a mastery-oriented school goal structure positively stimulate teachers' mastery-approach goal orientation. Moreover, the results of the empirical study in chapter 4 demonstrated that to enhance a teachers' motivation for learning and performance at work, facilitative managerial coaching skills have the most important impact. Facilitative managerial coaching behavior includes hands-on support for teachers and listening to the ideas of teachers instead of prescribing the exact steps to improve performance. The development of a safe environment

in which teachers can ask for help and where support is given for different perspectives and critical thinking can support teachers in SSVET to participate more in professional learning activities.

Moreover, the facilitative role of team leaders is also beneficial for teacher team learning. To enhance teacher team learning, teachers need the opportunity to interact during team meetings, and teachers need time for constructive conversations and reflective discourse. The team leader could stimulate sharing of knowledge, co-construction of knowledge and reflective discussions on contrasting perspectives by setting an agenda that not only is focused on coordination of tasks but also leaves time for discussion on educational practice.

4.3. Implications for teachers

This dissertation focused on teacher professional development within schools. Although teachers were the key stakeholders, this dissertation primarily focused on the conditions for successful professional development and not specifically on what teachers can do to contribute to team learning processes or to change their motivation. Nevertheless, three recommendations for teachers can be formulated based on this dissertation.

First, teachers must be aware of their sometimes implicit contribution to the professional development of other teachers. When teachers are working in a team and participate in team structures, they could actively share knowledge and be involved in constructive conflict activities based on their expertise and experience within the classroom.

To stimulate knowledge sharing in teacher teams, teachers must be aware of the difference in knowledge between themselves and the other team members. Over time, teachers become unconsciously competent in specific fields. One the one hand, this can be seen as a valuable asset for team learning, because it ensures knowledge is available in teacher teams. On the other hand, unconscious competence could lead to reduced levels of knowledge sharing because teachers could assume that this specific information is already common knowledge for all teachers in their team. Shared information is not necessarily new information for every teacher in a teacher team; it can be a new piece of knowledge for the team as a whole and, therefore, contribute to team learning

processes (Decuyper et al., 2010). To anticipate and overcome these reduced levels of knowledge sharing, teachers could actively and frequently evaluate if their knowledge is indeed common knowledge among other teachers.

Second, teachers could support their team leader to provide facilitative managerial coaching behavior. When teachers ask for help during their work processes when they encounter difficult situations in their jobs, they could ask their team leaders to actively function as a sounding board. In this manner, teachers invite the team leader to show the most valuable behavior that could stimulate teachers' success-oriented goal orientation profile. When teachers ask only for feedback, a manager is expected to provide guidance-oriented managerial coaching behavior, resulting in performance feedback and specific directions on how to improve instead of a constructive conversation on possibilities to improve. Moreover, this guidance-oriented managerial coaching behavior could reduce the level of the mastery-approach goal orientation of the employee. The results from this dissertation demonstrate that, specifically, the mastery-approach goal orientation is related to beneficial outcomes for teachers' and students' learning.

Third, teachers can actively contribute to the organization of the general requirement for team learning: the team meeting. When teachers emphasize that they would like to participate only in team meetings with a clear structure and a common goal, team learning is expected to be enhanced. Moreover, teachers should not only ask for a common goal but also emphasize the need for time on the agenda to spend on in-depth conversations on teaching experiences and specific problems.

5. Concluding remarks

Professional development of teachers remains an important topic for research and educational practice. This dissertation contributed to the scientific research on teacher professional development of SSVET teachers. In multiple studies in the literature, as well as quantitative studies, the antecedents of teacher professional development in terms of goal orientations were studied and stimulating

and hindering factors for team learning in teacher teams were identified. Moreover, this dissertation was one of the first to address goal orientation profiles in the teaching profession and contributed to the gap in research on the impact of team learning on educational outcomes in SSVET. SSVET teachers have received only limited attention from scholars in the past. The broad approach of this dissertation, taking into account both individual and team learning of teachers, contributes to an increased understanding of the professional development of teachers in SSVET.

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Summary

This dissertation explored how individual differences between teachers contribute to teacher professional learning in senior secondary vocational education (SSVET). The topic of teacher professional development in SSVET received increased attention in the past years. The introduction of competence-based education required teachers to collaborate strongly to implement this educational innovation successfully. Teachers' from multiple disciplines (i.e. hair dressing instructors and language teachers) have to work and learn together to provide students with an authentic learning environment. This authentic learning environment uses professional practice of workers as a starting point for education and is further referred to as competence-based education.

To stimulate this collaborative environment among teachers, the Dutch government stimulated the use of teacher teams that are collectively responsible for the quality of educational programs and their own professional development. The collaboration between teachers from various relevant subjects in teacher teams was expected to contribute to the effective implementation of CBE (Truijen et al., 2013) and strengthen professional development (MBO-Raad, 2009; OECD, 2016).

Teacher professional development can be defined as the continuous uptake of activities that contribute to improvement of the professional knowledge, skills and competences of teachers. In this dissertation, two types of informal teacher professional development were included: individual and collective teacher professional learning. Individual informal professional development activities were defined as acquisition of information and asking for feedback. Collective teacher professional learning was studied from the perspective of

team learning. Team learning refers to an iterative and continuous dialogue among teachers in a team resulting in renewed shared understanding or mental models (Decuyper et al., 2010; Edmondson, 1999; Gibson & Vermeulen, 2003). Team learning occurs most often unconsciously during team meetings of teachers, for example when they discuss their ideas for upcoming classes.

In this dissertation, two perspectives on teacher professional development were combined. The first part of this dissertation (Chapter 2, 3, 4) had a focus on the relationship between teachers' goal orientations and individual professional learning. Teachers' goal orientations explain the differences in individual behavior in achievement settings and refer to individuals' intention to develop competences, knowledge or skills (mastery goal orientation) or refer to teachers' motivation to seek for positive confirmation of demonstrated behavior (Dweck, 1991). A mastery goal orientation can strengthen the participation in professional development activities while for performance goals can also bring about negative feelings because failure is interpreted as a lack of ability. While previous research has taken into account the separate effects of learning goals and performance goals on professional learning activities (Janssen & Prins, 2007; Runhaar, et al., 2010), no studies have considered combinations of individual goal orientations in relation to professional development. In this dissertation, goal orientation profiles were used as a starting point for research.

In the second part of this dissertation (Chapter 5 and 6), the collective nature of teacher professional development was studied from the perspective of teacher team learning. In relation to team learning, this dissertation explored the team conditions for successful team learning in teacher teams. Moreover, studies that focus on the link between team environment and implementation of educational innovations are limited. This question is addressed in Chapter 6 and thereby this dissertation enhanced our understanding of the impact of professional development of teachers on educational innovations.

Overview of this dissertation

This dissertation covered six research questions that were discussed in five chapters. *Chapter 2* explored the existing body of knowledge on teachers' goal orientations. This systematic literature review resulted in 23 journal articles on

teachers' goal orientations. An empirical synthesis of the results demonstrated that scholars have studied a wide variety of associations with teachers' goal orientations, and that mainly cross-sectional studies were used. The associations studied in the included studies mainly focused on outcomes of teachers' goal orientations (such as professional learning, instructional practices, motivation for teaching or teachers' well-being). The question how school environments or team leaders can strengthen or weaken goal orientations was only limitedly addressed. Results showed that teachers' mastery goal orientation was generally positively associated with teachers' well-being and professional learning. Moreover, the mastery-goal orientation of teachers had a positive impact on instructional practices that focus on enhancement of deep-level learning and supportive classroom management styles while teachers' while teachers' performance goal orientation was positively related to instructional practices that enhance surface level learning and include comparison of students with each other. Besides the empirical results, this chapter also presents methodological challenges (i.e. the use of specific scales, or analytical approaches) that are related to studying teachers' goal orientations and need to be taken into account for future research.

Chapter 3 of this dissertation builds forth on the existing knowledge of the association between goal orientations and professional development by addressing the relationship between teachers' goal orientations and two professional learning activities: acquiring information and asking for feedback. To this end, this chapter introduced a new perspective on teachers' goal orientations: studying goal orientation profiles instead of relationships between single goal orientations and outcomes. An advantage of the goal orientation profile approach is that coexistence of goal orientations is used. Different combinations of goal orientations may boost each other or work as a buffer to diminish negative effects of specific goal orientations. Results of this empirical study, using a sample of 984 teachers in SSVET, showed that teachers with a success-oriented profile (combining high learning and high performance-approach goals) scored significantly higher on professional development activities while teachers with a high-avoidance goal orientation profile scored significantly lower on participation in professional learning activities.

The results of chapter 3 demonstrate that the use of goal orientation profiles can be valuable for teacher professional learning. The question remains,

how teachers' can be stimulated to transfer to a success-oriented profile to increase the chance of participation in professional development activities. In *Chapter 4*, this question is addressed from the perspective of managerial coaching behavior. Managerial coaching behavior encompasses one-on-one interaction between a teacher and a manager, during which the manager formulates expectations for future development and performance. Meanwhile, the manager supports the teacher with hands-on support and guidance (Heslin et al., 2006). A two-year study was conducted to analyze if and how teachers change in their goal orientation profiles over a period of one year. Results showed that although a majority of the teacher remained in the same goal orientation profile over time (91.2%) a small percentage of the teachers shifted towards the success-oriented goal orientation profile. Not all types of managerial coaching behavior were evenly effective. Facilitative managerial coaching behavior (stimulating teachers by acting as a sounding board for new idea) was positively associated with belonging to the success-oriented goal orientation profile while providing predominantly feedback was negatively associated with belonging to the success-oriented goal orientation profile. Facilitative managerial coaching supported a small group of teachers to change to the success-oriented profile while providing feedback and being an inspirational managerial coach did not support this transition.

In *Chapter 5*, the perspective shifts from individual professional learning towards learning within teacher teams. This chapter reviewed all available scientific literature on team learning in teacher teams (N=20) and maps variables that affect team learning (such as leadership, team characteristics) or are influenced by team learning (such as educational outcomes). Results of this chapter indicate that team learning in teacher teams is promoted by team leaders who facilitate reflective discussions and hindered by the limited time and depth of conversations in team meetings. Teams who want to stimulate team-learning processes would be wise to reflect on the structure and type of their team meetings. It might be useful to make a distinction between coordination-oriented meetings and reflection-oriented meetings to create a timespan for team learning to occur. Another conclusions of the synthesis of research in Chapter 5 was that only limited research was conducted on the impact of team learning in teacher teams on education itself.

The SSVET sector introduced teacher teams as organizational unit because

they assumed that teacher teams could contribute to effective implementation of CBE. *Chapter 6* presents a first study to explore the relationship between team learning in teacher teams and the implementation of CBE in SSVET. To address this topic, a quantitative study using a sample of 1008 teachers from 93 teacher teams was conducted. It was expected that all types of team learning activities (information acquisition, boundary crossing, information processing and information storage and retrieval) would facilitate the implementation of CBE. The results indicate that participation in collective team learning activities is important for education reform in SSVET. The results of this chapter imply that it is important for SSVET institutions to support team learning in teacher teams if they want to facilitate education reforms.

To conclude

This dissertation contributed to research on teacher professional development of SSVET teachers. In a variety of studies combining literature and quantitative approaches, the antecedents of teacher professional development in terms of goal orientations were studied and stimulating and hindering factors for team learning in teacher teams were identified. The sample of SSVET teachers used in this dissertation contributed to the enhanced understanding of factors that contribute to both teacher professional development and the impact of teachers' team learning on the implementation of CBE. The diverse research approach used in this dissertation, contributed to the call for more research with a focus on the impact of professional development of teachers in SSVET.

Appendices

APPENDIX
A

Appendix A
Questionnaires
Chapter 3

Information acquisition (based on Van Offenbeek, 2001)

1. I collect professional information from books, journals, television, or internet
2. I try out new work methods or procedures
3. I participate in meetings outside the school (e.g., courses, conferences, or workshops)
4. I ask my team members for help or advice on my work
5. I participate in meetings inside the school (e.g., workshops)

Feedback asking behavior (based on Wong, 2004)

1. I review the team's work with people external to the team
2. I obtain help or advice from people external to the team
3. I seek ideas and/or expertise from people external to the team
4. I seek feedback about the team's work from people external to the team

Appendix B
Team Learning Questionnaire
Chapter 6

Information acquisition (based on Van Offenbeek, 2001)

1. I collect professional information from books, journals, television, or internet
2. I try out new work methods or procedures
3. I participate in meetings outside the school (e.g., courses, conferences, or workshops)
4. I ask my team members for help or advice on my work
5. I participate in meetings inside the school (e.g., workshops)

Boundary crossing (based on Wong, 2004)

6. I review the team's work with people external to the team
7. I obtain help or advice from people external to the team
8. I seek ideas and/or expertise from people external to the team
9. I seek feedback about the team's work from people external to the team

Information processing (based on Van den Bossche et al., 2006; Van Offenbeek, 2001)

10. In my team, team members give each other feedback
11. In my team, team members exchange knowledge and information with each other
12. In my team we challenge each other to look at our work in new ways
13. In my team we develop a shared understanding about our work approach
14. In my team we try to achieve a clear consensus
15. The opinions and ideas of team members are carefully discussed
16. This team tends to handle differences of opinion by addressing them directly
17. In my team we carefully listen to each other's ideas about work

18. In my team we consider whether there are better ways to deal with the work
19. In my team professional information is disseminated across all team members

Information storage and retrieval (based on Van Offenbeek, 2001)

20. In my team agreements are carefully stored
21. In my team we are storing our knowledge in a to all team members accessible place
22. In my team we refer to earlier events or affairs to make use of this information and knowledge again
23. In my team we stick to the agreements we have registered as a team
24. In my team we tend to draw up standard procedures, if possible

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About the author

Eva Kunst was born on April 2nd, 1989 in Almere, the Netherlands. After she completed secondary education at het Helen Parkhurst in Almere in 2007, she started the bachelor Civil Engineering at the University of Twente. After a year, she decided to follow her calling and switched to the bachelor Educational Science and Technology at the University of Twente and obtained her bachelor's degree (B.Sc) in 2010. In 2013, she obtained her Research Master's degree in Child Development and Education (M.Sc) at University of Amsterdam. During her studies she specialized in advanced statistical research methods, educational policies and teachers professional learning.

Under supervision of Prof. Rob Poell and dr. Marianne van Woerkom she started as a PhD-candidate in 2013 at the department of Human Resource Studies at Tilburg University. In collaboration with scholars from Wageningen University and Research, the project Team Up for Learning and Professionalization was started to explore team learning in teacher teams in Vocational Education Training institutions in the Netherlands.

Eva has published her work in international journals such as Teaching and Teacher Education, Journal of Vocational Behavior and Vocations and learning. Moreover, she presented her work at national and international conferences. For instance, Congress of the European Association of Work and Organizational Psychology (Oslo, 2015; Dublin, 2017), Small Group Meeting on Team Learning and Team Adaptation (Lisbon, 2014), the Dutch HRM Network Conference (Utrecht, 2015, Nijmegen, 2017), the Dutch Educational Research Days [Onderwijs Research Dagen] (Leiden, 2015; Rotterdam, 2016; Antwerpen, 2017), and the Education and Competence Symposium (Wageningen, 2016).

Furthermore, she has been a lecturer in courses on HR-Analytics, general research and personal skills of the bachelor and master Human Resource Studies, and supervised bachelor and master theses. Besides teaching and research activities, Eva chaired, during her time as a PhD student, the faculty council of the Tilburg School of Social and Behavioral Sciences for a period of two years.

Publications and Presentations

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